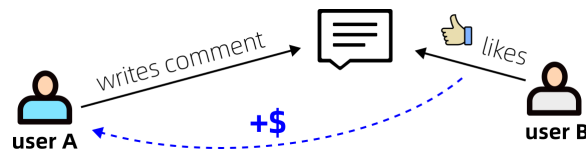


## Solidi Coin - White Paper

April 21, 2025

### 1 Economics of the Solidi Coin

- Solidi coins are earned via **voting**. For example, if your comment on a news site is liked by someone, you get rewarded with Solidi:



Coins are also synonymous with **Reputation**, and also equivalent to **Voting Power** (explained below).

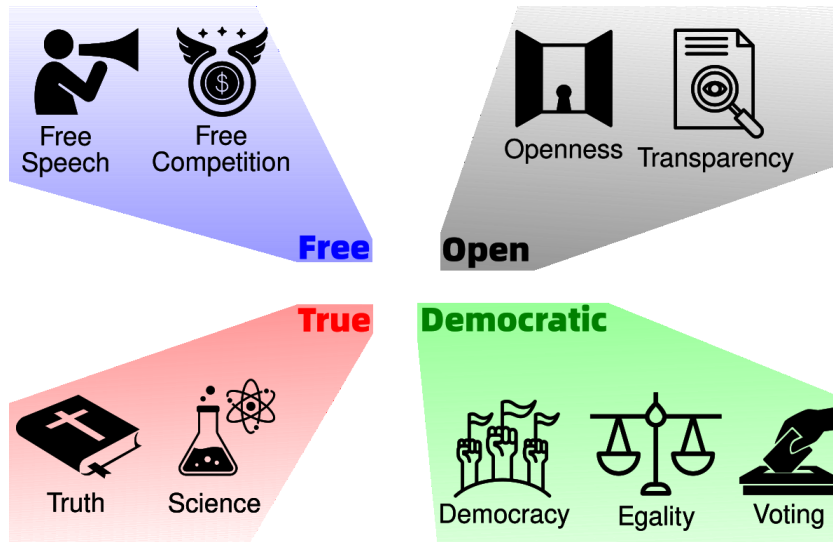
- **Exponential Conversion.** A member can spend money to “pump up” his reputation, but it gets **exponentially** more expensive as his reputation goes up. This prevents reputation from being dominated solely by capital, as even the wealthiest individuals or funds could not buy a lot of reputation. In other words, Solidi is essentially different from traditional money; It may correct the problem of unfair wealth distribution, as current wealth in our world follows a log-normal distribution.<sup>1</sup> Below, “money” or “cash” refers to traditional money.

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<sup>1</sup>As Michael Sandel, Harvard professor and author of the book “Justice,” says: most of us are grateful to our high school teachers, and we also admire the soccer skills of Lionel Messi, but Messi’s salary is nearly a thousand times that of a school teacher’s, making us question that something may be wrong with our society.

As for why there is exponential distribution of wealth, mathematically it implies some kind of “multiplicative” effect, though I don’t know of a well-established explanation. Perhaps an example is: people in the food market don’t buy “average” apples; they pick the best ones and leave the rotten ones behind. Such “winner-takes-all” dynamics may be the reason behind “the rich gets richer and the poor gets poorer”.

- **Withdrawal** is the reverse of the above, but this may be problematic. As some users get considerable reputation, they may be tempted to cash-out (withdraw), causing the platform to run out of cash and collapse. How to prevent this? A solution is to calculate withdrawal as a **proportion** of the cash pool. This means that when the total cash reserve of the platform is low, withdrawals are also insignificant. In slogan this may be summarized as: *buy exponentially, sell proportionately*.
- **Generosity of Likes.** Every time a member likes a comment, the creator of the comment get +1 unit reputation, while the sender gets  $\frac{1}{100}$  deduction in reputation. This encourages users not to be stingy with likes.
- Our **Core Values** are:



These are all very classical ideas developed in the Enlightenment period in the West, but are increasingly promoted as “universal” as they have primitive roots in almost every culture. It does not mean imposing Western values on the rest of the world. As our technology progresses, all these notions can now be **verifiable**, eg. blockchains and open-source.

- **What is the economic value of Reputation?** Expertise in one domain does not imply it in other domains; so Reputation should be classified by domain. We intend the Solidi platform to operate strictly by democracy, ie. via **weighted voting** where weights are reputation. But Reputation need not be confined to the Solidi platform; it

extends to other domains such as: business, technology, and political activism. Many people don't understand why business should involve politics, but the lack of well-functioning political institutions in developing countries (eg. in Africa) is a major obstacle to their economic development. This includes various forms of **corruption**. The people of developing nations must strive to reform our political institutions, and Solidi is a step towards this direction.

## 2 Implementation details

This may look complicated but is really just applications of exp and log and simple arithmetic and common sense. The main point is: due to the “generosity of likes,” the number of Solidis may increase rapidly, and if cashed out, would clearly bankrupt the platform. So we calculate withdrawals **proportionately** so that even if everyone cashed out all Solidis, the platform's capital will reduce to zero without bankruptcy problems.

- **Base Formula.** To keep things simple, when a user owns  $D$  Solidi coins, the equivalent amount in traditional money is *defined* to be:

$$M := M(D) := e^{\frac{1}{k} \cdot D} \quad (1)$$

where  $k$  is a conversion constant to be explained in the next section. Conversely,

$$D := D(M) := k \cdot \log M. \quad (2)$$

The buying and selling (withdrawal) of Solidi should always refer to this formula, but withdrawal is calculated differently.

- **To buy**  $\Delta D$  Solidi with cash  $\Delta M$ , when the user's current Solidi value =  $D_0$ . Let  $D_1 = D_0 + \Delta D$ , let  $M_0$  and  $M_1$  be the money value corresponding to  $D_0$  and  $D_1$ , so  $M_1 = M_0 + \Delta M$ . According to the base formula,  $M_0 = e^{\frac{1}{k} D_0}$ . This fixes the result:

$$\begin{aligned} \Delta D &= D_1 - D_0 = D(M_1) - D_0 \\ &= D(M_0 + \Delta M) - D_0 \\ &= D(M(D_0) + \Delta M) - D_0 \\ &= k \cdot \log(e^{\frac{1}{k} D_0} + \Delta M) - D_0. \end{aligned} \quad (3)$$

- **To sell**  $\Delta D$  Solidi, when user's current Solidi value =  $D_0$ , withdrawing

money  $\Delta M$ . Using same style of reasoning as above, we get:

$$\begin{aligned}
\Delta M &= M_0 - M_1 = M(D_0) - M(D_1) \\
&= M(D_0) - M(D_0 - \Delta D) \\
&= e^{\frac{1}{k}D_0} + e^{\frac{1}{k}(D_0 - \Delta D)}
\end{aligned} \tag{4}$$

but this is still problematic as explained in §1.

Let the actual amount of money in the Solidi platform be  $M_{Actual}$ . Suppose after a lot of “liking” interactions, the platform has a total of  $D_{Virtual}$  Solidi; this corresponds to an amount of money:

$$M_{Virtual} = e^{\frac{1}{k} \cdot D_{Virtual}}. \tag{5}$$

We expect that  $M_{Actual} \ll M_{Virtual}$  significantly, due to the “generosity of likes”.

We cannot simply let the user withdraw  $\Delta M$  as in (4), as  $D_0$  and  $D_1$  are based on  $D_{Virtual}$ , and doing so may eventually bankrupt the platform. The solution is to pay the user *proportionately* with:

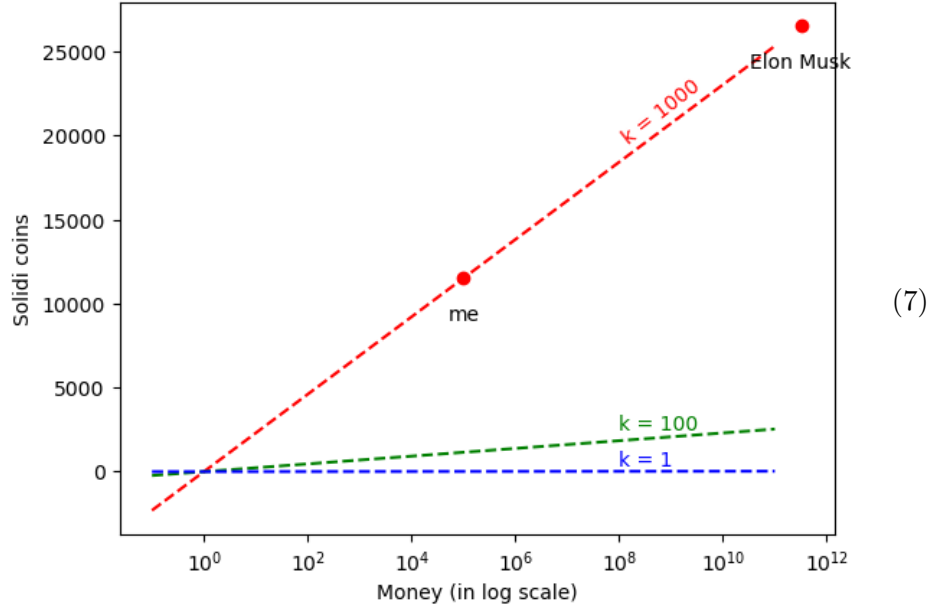
$$\frac{M_{Actual}}{M_{Virtual}} \Delta M, \tag{6}$$

where  $\Delta M$  is given by (4).

### 3 How to determine the constant $k$ ?

Below is a log-scale plot that shows clearly how the constant  $k$  affects the conversion from traditional money to Solidi coins. Note that on the vertical Y-axis, “me” and Elon Musk are not too far apart; but the horizontal X-axis is log-scaled, which if restored to normal scale, would place Elon far outside the right side of my screen, outside of my room, outside of Hong Kong, indeed 247km away from here (about the distance from New York City to

Baltimore).



One way to determine the value of  $k$  is to estimate how many “likes” are equivalent to Elon Musk’s life’s work so far. For  $k = 1000$ , Elon is worth about 26500 likes (assume 1 coin = 1 like), which is still too low. If we esteem Elon too high, then the tyranny of traditional money persists. If we judge Elon too low, then currently rich people won’t buy Solidi.

Some data for consideration:

- Elon Musk net worth as of March 2025 = 330 billion =  $3.3e11$
- Elon Musk peak wealth = 500 billion =  $5e11$
- World internet population in 2023 = 5.3 billion =  $5.3e9$
- most viewed YouTube video: 15.2B views
- most upvoted YouTube comment: 4.1M likes
- most upvoted Reddit post: 486K likes

## 4 Some questions

- Due to special exchange calculations, Solidi may be unable to be traded on standard exchange platforms? What exactly is the market price of Solidi?

**Answer:** It seems that every individual can sell Solidi at a specific

price depending on his/her current Reputation. Solidi cannot be sold in a mass market with a uniform, fixed price.

- Can Solidi be used to buy things or services in a market?

**Answer:** It seems the answer is Yes, but it brings up the question of why would someone want to sell their Reputations? And if Reputations are not saleable then perhaps we could reward people with money equivalent to Reputation, and then the money could be spent but the Reputation value would remain?