



SkyStaking

A Dual Token Mechanism for Rewarding Investors

November 16, 2018

v1.1

<https://soar.earth>

Abstract

SkyStaking is an addition to the Soar token framework that allows hodlers of the SkyStaking Security Token (SKYS) to stake locations anywhere the world using the Soar Super-map. A 'stake' is an area defined by the user on the Soar Super-map which will generate revenue for the stakeholder based on the value created on Soar within the area of their stake. While SkyStaking does not guarantee a return on investment, it does guarantee a share of the profits generated by the Soar platform.

SkyStaking takes ideas from traditional stock market incentivisation (dividends) and applies them to the new era of decentralised applications. Governed by smart contracts, SkyStaking is more efficient, transparent and quicker than traditional dividend models. Additionally, it takes the fulcrum of the geospatial concept laid out by the Soar platform and applies them to SkyStaking. The SkyStaking model opens up a new speculation market on the value of different locations across the world, and effectively creates a new asset class.

1. Background

1.1 What is Soar

Soar is a decentralised global Super-map of the world built on blockchain technology. The Super-map will include access to all mapping systems including daily satellite imagery feeds, through to high-resolution aerial sensors from planes and drone content collected by the greater community. All connected using blockchain technology to connect and share dynamic mapping data.

Soar will also create the world's first mapping 'app store' which will encourage experts to upload specific image analysis algorithms to help further process data relating to niche applications such as farming, mining, urban planning, security and even media and news.

The final and arguably most exciting component of the Soar platform is the SkyStaking system. SkyStaking will allow hodlers of the SkyStaking token (SKYS) to stake their tokens and share in the revenue generated from the area covered by their stake.

1.2 The Role of SKYM utility tokens in the Soar Platform

SKYM is an ERC20 cryptocurrency that:

- Facilitates the transactions of content on the Soar platform
- Calculates the value of content for a given part of the Soar Quadtree, based on the forces of supply and demand within the Soar ecosystem
- Remunerates SkySponsors who bridge the gap between everyday drone operators and the blockchain; and
- Helps seed the generation of content for the Super-map.

SKYM is a utility token that fulfils many needs on the Soar platform, however, there are several reasons why utility tokens are unsuitable for the SkyStaking model.

1.3 Limitations of utility tokens for incentivising investors

Soar has received investment in the form of Presale and a Public Token Generation Event. These parties expect a return on investment which typically will come in the form of:

- price fluctuation; and
- supply constriction as the finite supply of tokens tightens up from value-creating activities in the platform and scarcity drives up prices due to demand.

There are two fundamental issues with utility tokens as a mechanism to generate a return on investment:

Firstly, all utility tokens are subject to market volatility from many external sources which are beyond the control of the platform, as is a common feature of all blockchain projects. Within an ideal economic model of utility tokens, the price changes are only reflective of the performance of the platform. However, in the cryptocurrency market, this isn't the case with speculative activities, regulatory changes and large-scale events in the wider cryptocurrency market having a much larger impact in token price.

The second issue is that a rapid increase in the value of SKYM, while in the short term is beneficial to investors, it is inherently bad for the long-term health of the platform. Without value stability, both users and drone operators are likely to lose confidence in Soar as a marketplace and transaction volumes will fall which will negatively impact the platform's long-term viability.

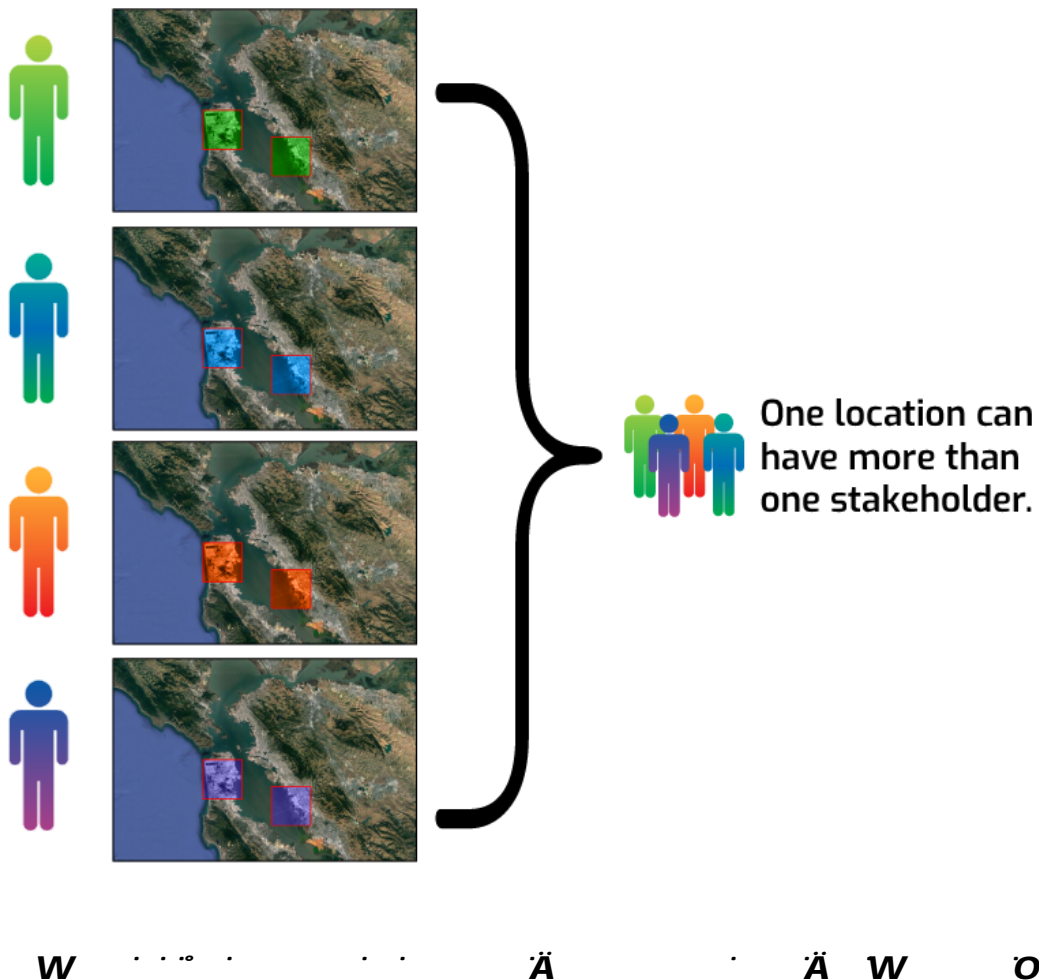
Here at Soar, we believe we have a compelling product that has a good long-term future. The premise of blockchain is openness and decentralisation which Soar's introduction of the SkyStaking system will remove speculative volatility in the system and encourage a new way to invest within the Soar platform.

The second tool will show how other stakeholders are allocating their SKYS tokens showing the potential for hotspots of activity and areas of opportunity for unstaked areas. The stakes held by SKYS owners are non-exclusive and can overlap so there may be many stakeholders in a single location. As discussed in Section 2.2, the payouts of a transaction are shared amongst the stakeholders in that area.

To illustrate the transparent nature of SkyStaking, Soar will also build a block explorer tool that can be used to view the payouts for any staked area and how these were calculated by the smart contracts.

2.2 Payout calculations

When content is purchased on the Soar platform the majority of the revenue from the transaction is transferred to the content creator. Soar receives a fixed commission percentage for the transaction and the remainder is set aside for the staking pool. As each location can have more than one stakeholder, payments from the staking pool are split between stakeholders. Figure 2 shows an example of multiple stakeholders covering the same area over San Francisco bay.



When a transaction occurs on the Soar platform, the SkyStaking smart contract will look at all the stakeholders who have allocated SKYS to a stake in that part of the world and calculate each party's payout as a weighted share of the staking pool.

For a given transaction of value, T , on the Soar platform we have three constants:

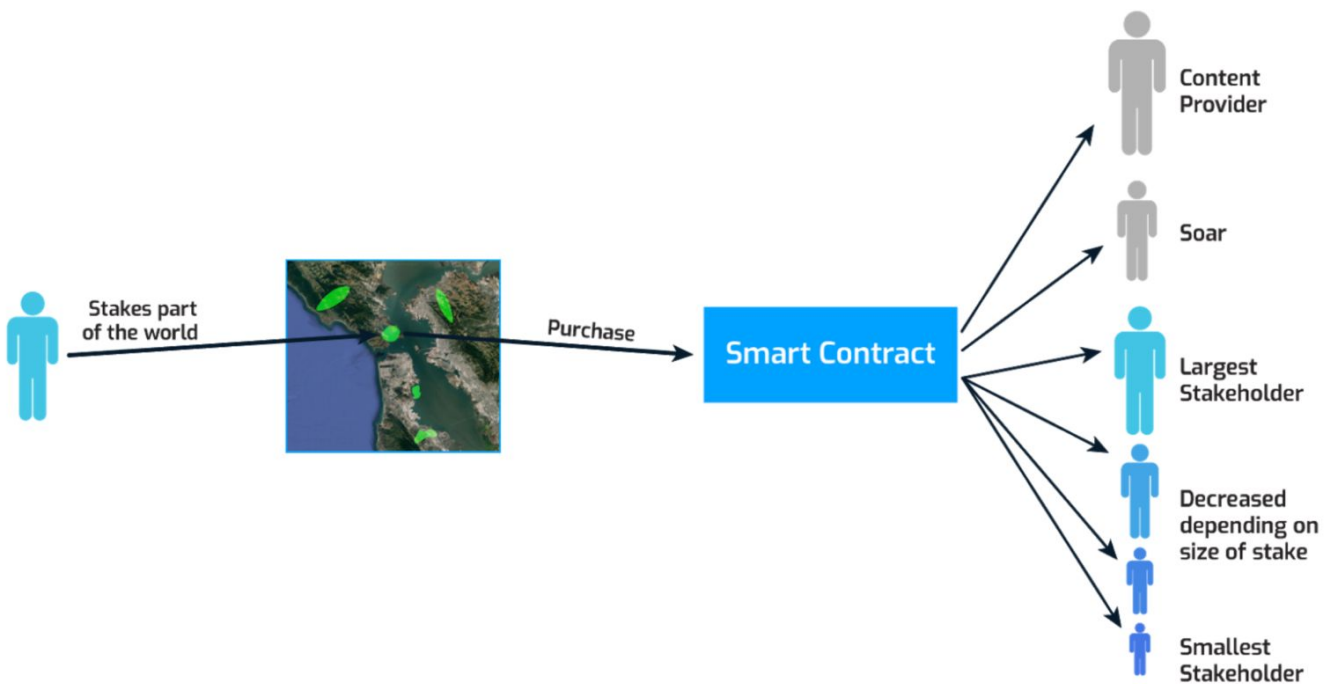
- P_c is the proportion paid to the content creator
- P_s is the proportion taken by Soar as commission; and
- P_p is the proportion allocated to the staking pool

These constants have the properties:

$$T \cdot P_c + T \cdot P_s + T \cdot P_p = T$$

$$P_c + P_s + P_p = 1$$

Figure 3 shows how revenue is shared between the content creator, the Soar platform and the stakeholders.



$W \cdot \tilde{N} \cdot \tilde{A} \cdot \tilde{A} \cdot \dots \cdot \tilde{A} \cdot \dots$

2.2.1 An example of SkyStaking in action

This section shows how the calculation of revenue shares for a transaction in a staked area is allocated between the parties. The values used for P below are for illustrative purposes only and may change in the final implementation. For this example we are using the following values:

$$\begin{aligned}P_c &= 0.7 \\P_s &= 0.2 \\P_p &= 0.1\end{aligned}$$

A user purchases content from the Soar super-map for 100 SKYM tokens

Content Creator Payout =	0.7 x Transaction = 70 SKYM
Soar Commission =	0.2 x Transaction = 20 SKYM
Staking pool =	0.1 x Transaction = 10 SKYM

Three stakeholders have allocated SKYS where the transaction occurs and share proportionally in the staking pool as follows:

Stakeholder 1 has staked 100 SKYS
Stakeholder 2 has staked 80 SKYS
Stakeholder 3 has staked 20 SKYS

Total staked = 200 SKYS for a pool of 10 SKYM

$$\text{Staking pool} \div \text{Total stake} = 10 \div 200 = 0.05$$

Stakeholder 1 receives $100 \times 0.05 = 5$ SKYM
Stakeholder 2 receives $80 \times 0.05 = 4$ SKYM
Stakeholder 3 receives $20 \times 0.05 = 1$ SKYM

2.3 A location-based staking mechanism

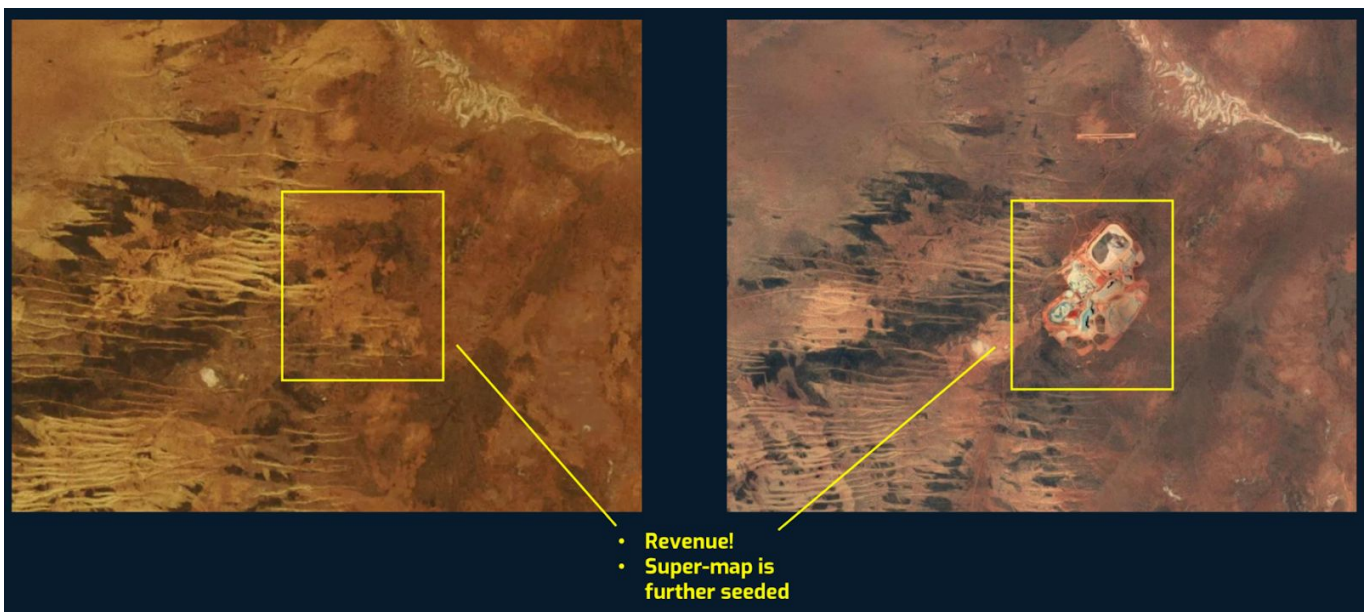
Stakeholders 'paint' their allocation on the Soar super-map with the User Interface described in Section 2.1. Soar defines a maximum resolution using the QuadTree^[1] and expresses the stake as a series of unique QuadTree coordinates^[2]. When a transaction occurs on the Soar Super-map the SkyStaking smart contract uses this coordinate to match against the stakeholders' SKYS allocations. Figure 5 shows how the QuadTree divides the world into grids and then into further sub-grids. Stakeholders can place their stake at any level of the QuadTree.

SKYS in an area and there is no activity while they hold their stake, then they do not receive any revenue.

However, if there is a spike in transactions in that area, then the stakeholder could potentially receive a larger reward than for an area with many, consistent low-payout transactions. As is typical, the higher the risk, the potential for a greater reward.

A stakeholder can speculate on future demand in an area or react to real-world events to get in early before demand for content in that area rises. Examples of this situation include; natural disasters, major economic developments, environmental changes and newsworthy events.

Figure 5 is an example of a discovered mine site in remote Western Australia which typifies a previously unstaked area that would be extremely valuable.



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Situations where this may occur includes where a significant natural disaster or new major economic development causes a spike in activity in the affected location over which a stake is placed.

The stakeholder can adjust their risk profile and spread their stakes to cover high-risk returns focussed on a single area with smaller but lower-risk consistent returns, examples of which are shown in Figure 6.

Staking Strategies

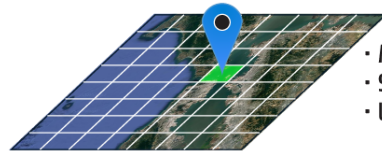
The size of the staking area will impact the % return of each transaction

Scenario 1: Diverse



- More diverse staking strategy
- Larger staking area, higher up the Quadtree
- More transaction, less % return for each transaction

Scenario 2: Focused



- More focused staking strategy
- Smaller staking area
- Less transaction, greater % return for each transaction

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3.2 Additional Market Opportunities

Another interesting property of the SkyStaking model is that organisations can stake areas they are interested in while actively procuring content for that area using the SkyBounty model described earlier. For example, a conservation organisation interested in preserving a rainforest can simultaneously have a stake that area while purchasing content from it and therefore receive a share of the revenue generated by their purchases. This would effectively work as a discount or rebate to the cost of acquisition of the content with the added value of also receiving a share from any other parties that purchase content in that area.

3.3 Benefits to SKYS Hodlers

The key benefit of SkyStaking for SKYS tokens hodlers will be to generate a passive revenue stream in SKYM tokens from the stakes they claim. As the location and risk profile of a stake can be changed on demand, the hodler has the ability to manage the value of their investment and rapidly adapt to changing market conditions.

In addition to the return received from holding a stake on Soar, there will be an inherent value for the SKYS token including the potential for an increase in its value over time and the sale of the token. Soar recognises that there are potential future trading opportunities for the SKYS token although as a security token any future trading in the SKYS token will be governed by regulations on the trading of securities. The provision for the sale and distribution of the SKYS token will be outlined in a future document with the assumption that it would be tethered to the SKYM token.

