



Orvium

Executive Summary

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Open and Transparent Science Powered by Blockchain

The first open source and decentralized platform for managing peer-review scholarly publications' life cycles and the associated data

Join the Effort:



Executive Summary

Problem Overview

The scientific publishing industry is one of the most profitable in the world. The top five publishers account for 50% to 70% of all publications, and their profit margins have been reported to exceed those of companies such as Google, Amazon and Apple. In 2015, the global market for scientific, technical, and medical (STM) publications was an estimated \$25 billion.

In contrast to any other publishing industry, private scientific publishers have pushed the publication efforts and costs to the research community. Scientific publishers have created an awkward triple-pay system: (1) governments fund most of the research, (2) volunteer scientists—usually paid by the government or research institutes—review the work, and (3) publishers sell the product back to governmental institutions and universities. Scientists and research institutions regularly criticize this outrageous economic model, which compromises the dissemination and growth of scientific knowledge, a process responsible for some of the most revolutionary changes in human history.

Moreover, the current publication model has several problems affecting the research community, including high publication costs; copyrights held by publishers rather than authors; long, opaque and oftentimes biased publication and peer review process; lack of rewards and recognition for reviewers; and a proliferation of low-quality journals.

In the last few decades, several initiatives have tried to improve this situation. However, these initiatives have been insufficient to reverse market inefficiencies and barriers.

Orvium Mission

Orvium works to eliminate market inefficiencies and improve the quality and effectiveness of scientific publishing. The ultimate objective is for Orvium to be the leading publication platform for the research community while returning the benefits of science to the society.

Orvium Solution

Orvium leverages a unique and seamless integration of cutting-edge technologies: Ethereum blockchain and smart contracts, decentralized storage solutions, big data analytics, and cloud computing, to create a platform to process, validate, and disseminate research data and results.

The Orvium platform is characterized by the following:

- Instantaneous proof-of-existence. Manuscripts are available from the moment they are submitted to Orvium.
- Copyright and licenses are owned and transferable by authors. Authors retain control of their work and its potential economic benefits.
- Optimal publication and access costs. The prices are not influenced by monopolistic or oligopolistic market structures.
- Efficient framework to create decentralized journals with low maintenance and operational costs.
- Seamless integration between research data and results.
- Continuous and transparent peer reviews. The research community is empowered to publicly determine the validity and soundness of the research.
- Public recognition and economic reward for peer reviewers.
- Journal subscription freedom. No journal subscription model is enforced.
- Accommodates gray literature and its validation.
- Transparent calculation of quality metrics such as impact factor and peer review quality.
- Eliminates current “predatory” practices and conflicts regarding plagiarism, idea ownership and registration.
- Social platform.

In addition, Orvium is founded on open source principles, therefore all the software developed by Orvium is, and always will be, open source.

Business Model and Orvium Token (ORV)

Orvium establishes a transparent, comprehensive and competitive business model to obtain and increase revenue while supporting global research. Orvium’s business model is built on the Orvium token (ORV), a new digital cryptocurrency created specifically for the platform.

The different phases of a manuscripts’ and journals’ life cycles, such as manuscript submission, peer review, payments for copyright licenses, research data sharing, journal management, etc., will generate exchanges of ORV between institutions, authors, peer reviewers, journal owners, readers and any social actor involved. This

decentralization will unlock the full potential of a new, fair, transparent and competitive market controlled by the entire community, free of biased oligopolies and hidden interests. The core of the business model and its interaction with the ORV token is summarized as follows:

Manuscript Submission

Authors submit their manuscripts to Orvium, creating a public proof-of-existence and authorship which is stored in the blockchain. Orvium offers full traceability of the life-cycle of the manuscript and the possibility to stake a number of ORV tokens to encourage and challenge the community for peer reviews.

Peer Review

Researchers submit their reviews to Orvium. If these are accepted reviewers may claim the specified amount staked by the author. This represents a change in the life-cycle of the manuscript and therefore is persisted in the blockchain.

Research Data

Authors can at any moment share the data used in the research. For that authors are empowered to select the licensing and copyright model that fits with their use case best. Others can use ORV tokens to acquire rights over the data.

Decentralized Autonomous Journals (DAJs)

Both individuals and institutions can create decentralized autonomous journals with ease. These decentralized infrastructures reduce costs significantly.

Members of the DAJs are free to define the licensing or subscription based model and also their governance rules. ORV tokens are used to pay operational licenses, acquire rights and receive payments from readers.

Science Patronage

Any person or entity can challenge the scientific community to solve specific problems or/and challenge the society to contribute to research programs. For that the community stakes ORV tokens that will be used as reward.