Rise of digital finance: Tokenising mining & metals assets

Can tokenised mining royalties and metal streams unlock a new investor base?
As challenging financing conditions continue to persist in the mining & metals sector, Rebecca Campbell and Andrzej Omietanski of global law firm White & Case LLP explore the possibility of tapping into a newer and more diverse investor base via blockchain-based digital finance techniques.

The authors would like to thank Arnoud Star Busman, Chief Executive Officer of MineHub Technologies, Inc. (formerly Innovation Lead at ING), Alison Mangiero, President of the Tocqueville Group (TQ), Prat Vallabhaneni, partner, and Laura Kitchen, associate of White & Case LLP for their contributions to this article.

Rapid advances in blockchain technology are reinventing the way companies operate and deliver products and services to their clients. These changes are particularly visible in the mining & metals industry, a sector that has been traditionally slow in adopting technological innovations. Yet blockchains and smart contracts, which to this point the sector has focused on as a source of productivity and transparency gains for the mining & metals global supply chain, could herald new sources of finance too. Miners face a persistently challenging environment to raise equity and equity-like capital to fund ventures. According to the State of Mining Finance 2019 Report produced by the Prospectors & Developers Association of Canada and junior financing tracker Oreninc, funds raised via equity in 2018 were at the lowest recorded level in the past decade, with equity funding dropping approximately 40 per cent from 2017 to 2018. Could blockchain-based digital finance techniques provide a funding solution to miners?
Digital token offerings have emerged in the last few years as a new way to fund the development of emerging technologies. With their unique benefits, they are well placed to emerge as an alternative to or a supplement to traditional financing options available to mining companies.

**ICOs:** a recap

The first example of a blockchain-based digital token offering was an initial coin offering (ICO) by Omnic Layer, formerly known as Mastercoin, in early 2013. Omnic is a digital currency and communications protocol built on the Bitcoin blockchain. Since the first ICO in 2013, ICOs have, in short, exploded. An ICO is a method of raising capital in which investors participate in the fundraising by transferring government currencies that, and/or cryptocurrencies to the issuer in exchange for digital tokens. The tokens represent a holder’s right of benefit or performance vis-à-vis the issuer.

The underlying technology of the tokens is based on blockchain, which is maintained by a distributed network of computers and participants. Using cryptography to record transactions, blockchains such as Bitcoin and Ethereum process, verify and track the trade of the relevant virtual currency (i.e., Bitcoin or Ethereum), distributed across independent networks. These components, and particularly public blockchains, can remove the need for a variety of intermediaries, at least on a technical point of view. Logically, what is necessary will be facts and circumstances specific and dependant on the jurisdiction involved (i.e., where the blockchain is maintained), which is why the business community and in particular public blockchains, miners and investors participate in the fundraising by transferring government currencies that, and/or cryptocurrencies to the issuer in exchange for digital tokens. The tokens represent a holder’s right of benefit or performance vis-à-vis the issuer. The underlying technology of the tokens is based on blockchain, which is maintained by a distributed network of computers and participants. Using cryptography to record transactions, blockchains such as Bitcoin and Ethereum process, verify and track the trade of the relevant virtual currency (i.e., Bitcoin or Ethereum). Security token offerings are relatively easy to structure because of the relative certainty of technologies like the ERC20 token—issued on the Ethereum blockchain—which simplifies the process necessary to create and distribute a token cryptographic asset. This allows issuers to prepare and launch token offerings quickly and effectively.

**Miners keen on creative financing structures**

As challenging financing conditions continue to persist, miners have been looking for creative financing options to fund their ventures, and in particular their growth projects. While traditional financing options—bonds, loans, project finance, prepayment, convertible bonds, equity—remain generally the most attractive and understood, it is now common for companies to access multiple financing sources to diversify their capital structure, combining traditional financing options with alternative financing sources—royalty, streaming and/or or private debt. Mining royalty and metal streaming financings have been particularly popular with miners in the last decade as an alternative financing source for growth projects, allowing access to early-stage capital without diluting equity ownership.

**What is mining royalty finance?**

A mining royalty is a right to receive payment based on a percentage of mineral production or the revenues or profits generated from the sale of those minerals at a mine. A royalty typically involves an up-front payment to the mining company from the royalty holder (i.e., investor) in return for a contractual undertaking from the mining company to pay a specified percentage of future revenue for a specified period. This can be based on a percentage revenue based on, for example, profit, net smelter return or production. The up-front payment received from a mining royalty investment can be used for many purposes, from general corporate purposes and capex to acquisitions and even exploration.

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**Key benefits for Issuers**

<table>
<thead>
<tr>
<th>Key benefits for Issuers</th>
<th>2013</th>
<th>2017</th>
<th>2018 – 2019</th>
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<tbody>
<tr>
<td>A listed token issuance creates a liquid market and allows investors to trade in and out of their positions relatively easily</td>
<td>May offer a liquidity premium for investors and the opportunity to see gains more quickly and to take profits out more easily</td>
<td>Typically can be accessed by any (legal) investor—may not have to be an “accredited investor”</td>
<td>Provides comfort that the token has been “vetted” by the exchange and/or “certified” by the platform.</td>
</tr>
<tr>
<td>Tap into existing market participants of the exchange and shares marketing costs</td>
<td>May be able to reach a broader investor base (democratisation) compared to traditional securities and attract a different investor base to the mining &amp; metals sector</td>
<td>Provides comfort that token has been “vetted” by the exchange</td>
<td>Provides investors an instrument type and offering structure within a well-understood securities law framework</td>
</tr>
<tr>
<td>Leverage credibility of exchange</td>
<td>Lower transaction costs compared to traditional investment contracts</td>
<td>Lower transaction costs compared to traditional investment contracts</td>
<td>Lower transaction costs compared to traditional investment contracts</td>
</tr>
</tbody>
</table>

**Example**

<table>
<thead>
<tr>
<th>Example</th>
<th>2013</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethereum ICO (I23 2014)</td>
<td>BitTorrent IEO (Q1 2019)</td>
<td>Asian Coin STO (Q4 2018)</td>
</tr>
</tbody>
</table>

**AML/YC**

An investor may have to go through an AML/YC process, as set up by the project

Conducted by the exchange as a condition to signing up and purchasing tokens

High level of AML/YC in compliance with regulations

**Level of regulation**

<table>
<thead>
<tr>
<th>Level of regulation</th>
<th>Low</th>
<th>Low/Medium</th>
<th>High</th>
</tr>
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The flexibility and profit-sharing mechanism of mining royalty finance is particularly attractive as it allows mining companies, at various stages of their life cycle, to access up-front funding as a substitute to an equity raise to fund feasibility studies or debt in order to fund the development and construction of an asset.

Taking the traditional mining royalty finance model and combining it with an innovative digital financing wrapper in the form of an STO, it would provide a very attractive business model for both mining companies wishing to raise capital and for investors. Similarly, the mining stream financing model—a metals prepayment structure commonly used in the sector—would be potentially amenable to tokenisation. This may require the investor to accept a physical commodity settlement and is likely to evolve after “royalty tokenisation” has taken hold.

Royalty mining token: Structure and legal framework for an STO

There are many ways and options to structure a mining royalty token which includes investment from both US investors and non-US investors. For instance, a mining royalty token issuance could be split into two simultaneous token offerings—“Series A Tokens” and “Series B Tokens”—to ensure a “light regulatory burden” in compliance with US Securities Regulations. Series A Tokens could be issued to specific targeted investors who do not need an immediate liquid market and would be happy to hold onto the tokens, while Series B Tokens could be issued in another jurisdiction with favourable token issuance regulations towards non-US investors.

Series B Tokens could be issued to non-US investors in reliance on US Regulation 5 through an STO. Since B Tokens can be potentially listed on an exchange in a non-US “token friendly” jurisdiction, where such an issuance may allow for quick secondary market liquidity. Under US Regulation S, there is also no limit on the amount of money that can be raised, and general solicitation is allowed as long as it does not target any US investors. The concern is that Series B Tokens will raise resale restrictions on them with respect to US investors.

STO structuring example: Revenue-linked royalty token

Jean-Sebastien Jacques, Rio Tinto CEO, October 2018

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The royalty token offering gives greater control to the mining company in raising royalty-linked capital and potentially diversifies the sources of royalty finance away from the select group of listed royalty companies and specialist funds that have traditionally dominated this realm of mining finance.

All hype and speculation?

The recent rise of blockchain-powered digital financing tools in the form of ICOs created considerable hype and fuelled significant speculation. Some ICO scams tarnished the reputation of the underlying technology undermining these digital financing tools. However, blockchain and the digital financing tools built on it are showing signs of a paradigm shift from speculation to application. We are entering a phase in which there is a realisation that unregulated—and in certain cases—speculative ICOs without any economic rationale may not be best suited to succeed as a widely adopted digital financing structure, especially by traditional investors. Rather, digital financing structures, such as STOs compliant with regulation and structured with a sound economic purpose, are more likely to succeed.

Recent tokenisation of real-world assets by Elevated Returns—a financial group focused on digitising traditional financial assets—through an US$18 million STO is a sign that regulated blockchain-powered digital financing tools will be embraced to raise capital by financing “real-world assets” and not only to raise capital for technological innovations, such as funding the development of source code. Tokenisation will also come to the mining & metals industry. Traditional mining royalty financings, wrapped in an STO, are likely the first blockchain-based digital financing structures that will be widely applied in the mining & metals industry.

Royalty mining token: “STO to a select few investors...”

White & Case

<table>
<thead>
<tr>
<th>Series A Token</th>
<th>US investors</th>
<th>Royalty rights</th>
<th>Token proceeds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Series B Token</td>
<td>Non-US investors</td>
<td>Royalty rights</td>
<td>Token proceeds</td>
</tr>
</tbody>
</table>

Questions

Who will diligence/value the mining royalty token of the issuer? Traditionally the realm of specialist royalty companies who typically grant royalties. Should be addressed via expert diligence and adequate disclosure in the investment documentation (arguably little or no difference to IPOing a single royalty).

What if the issuer grants security over the mining royalty token for example, an assignment by way of security of the contract granting rights to investors?—will it work? This would be uncharted territory and “untested,” but likely yes if structured properly

High-level comparison of funding sources

<table>
<thead>
<tr>
<th>Monetised asset</th>
<th>Equity</th>
<th>Traditional private mining royalty</th>
<th>Mining royalty token (STO)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metal proceeds</td>
<td>Entire company</td>
<td>Royalty stream</td>
<td>Royalty stream</td>
</tr>
<tr>
<td>Royalty rights</td>
<td>Equity return</td>
<td>Depends on royalty, revenue-based (NSR, ODR, GR, FR, or FF) or profit-based (NPV or FR)</td>
<td>Depends on royalty, revenue-based (NSR, ODR, GR, FR, or FF) or profit-based (NPV or FR)</td>
</tr>
<tr>
<td>Royalty rights</td>
<td>Contract and stock exchange rules</td>
<td>Contract</td>
<td>“Smart contract”/exchange rules</td>
</tr>
<tr>
<td>Investor protection</td>
<td>High</td>
<td><em>MEDIUM</em></td>
<td>High/High</td>
</tr>
<tr>
<td>Investor base</td>
<td>Equity investor</td>
<td>Royalty company/fund (likely syndicated)</td>
<td>Syndicated/diverse array of token investors</td>
</tr>
<tr>
<td>Timetable</td>
<td>Varies</td>
<td>Medium/Quick</td>
<td>Medium/Quick</td>
</tr>
<tr>
<td>Effort</td>
<td>High</td>
<td>Medium</td>
<td>Low/Medium</td>
</tr>
<tr>
<td>Costs</td>
<td>High</td>
<td>Medium</td>
<td>Low/Medium</td>
</tr>
</tbody>
</table>
Roadmap to tokenising royalties in the mining & metals industry

Initial planning
1. Identify underlying source of royalty
2. Understand current token market landscape (which is constantly evolving) and current pain points
3. Identify all possible sources of capital for next financing round (including non-ICO/IEO/STO routes as well) and develop initial token structuring options
4. Analyse the potential implications of token issuance on the issuer’s existing capital structure and the regulatory landscape
5. Prepare initial business financial and operating model
6. Consider building out internal team and identify potential advisory firms (and appoint them if necessary) to assist with the token issuance
7. Diligence the royalty stream

Token economics design
8. Appoint token advisers
9. Design and refine token economics model and token valuation—will require valuation of the royalty stream
10. Select which blockchain protocol (with smart contract functionality) should be used to facilitate the token launch: Ethereum, Tezos, etc.
11. Finalise whitepaper

Detailed planning
12. If not already done, appoint legal counsel, tax advisers and accounting firm
13. Analyse and structure token issuance so that it is consistent with relevant regulations and does not impact issuer’s capital structure from a legal and tax perspective
14. Prepare overall marketing and sales strategy and timetable for token issuance, and ensure launch engine (SEO) for website

Marketing and sales
15. Appoint marketing company to help with marketing and sales strategy (if with a broker who typically receives a commission on each sale)
16. Finalise whitepaper

Token execution
17. Set up and finalise KYC, and Arial, escrow and special purpose vehicle (SPV) for token issuance
18. Launch website
19. Draft and finalise legal documentation (investment agreement, private placement memorandum, lock-up agreement) and ensure legal “rules and bolts” in order
20. Launch royalty token!

Indicative timeline
Steps 1 to 14: 5 to 15 weeks
Steps 15 to 22: 5 weeks

Practical tips

On which blockchain should mining companies consider issuing a security token?

How should mining companies go about hiring developers to develop the “techy” aspects of a security token?

A question of when, not if... The rise of digital financing structures will have profound implications for the mining & metals industry. Miners will be able to access alternative funding methods, which will be a welcome development, given the decline in equity funding into the sector. Industry players will now need to fully understand digital financing structures before engaging with miners who are raising such capital. For example, Elevated Returns has a pipeline of real assets in excess of US$1 billion targeted for these future token issuances recently announced that it was switching from Ethereum to Tezos—a platform for smart contracts and decentralized applications—on the blockchain on which it will offer their fully compliant tokenised real-estate offerings to qualified investors. Elevated Returns will be working with the Tocqueville Group (TD), an organisation that works with companies looking to build on Tezos.

They could reach out to blockchain foundations and/or their partners. For example, the Tezos Foundation, which supports the Tezos blockchain platform, raised US$332 million during a fundraising in July 2017. The Tezos Foundation provides grants from the raised funds to compare projects considering building on the Tezos platform and TD provides them with assistance. “Representatives from both TD and the Tezos Foundation are happy to have conversations with mining companies about how to go about the process...resources include support for technical integrations and training of in-house technical teams...the Tezos Foundation may also be able to help provide financial support and other resources as well,” says Alison Mangiero, President of TD.

Digital mining royalty token issuers and investors should consider taking advantage of new technological innovations that are coming to the mining industry. For example, MineHub—a company dedicated to realising the digital transformation of global mining & metals supply chains—is developing a platform that, amongst other things, orchestrates the coordination of physical delivery and settlement of transactions. This would provide mining royalty issuers and investors/token holders with forecasted and realised volumes and revenues at a transaction level. In real-time...connecting a digital mining royalty token to the MineHub platform would further digitise the transaction and information flow process and provide for greater transparency for both issuers and investors,” says Arnold Star Busman, CEO of MineHub Technologies, Inc. (formerly Innovation Lead at INO).

“...mining assets underpinning tokens (cryptocurrencies)…”

The beauty of gold is that it’s a solid asset. It’s been around for a very long time and will continue to be around. The problem with cryptocurrencies is that the market is always changing and you constantly have to watch it.

Randy Smallwood, CEO, Silver Wheaton

However, imagine the powerful combination of solid mining asset underpinning tokens (cryptocurrencies)…
Excerpt from a sample smart contract code for a mining royalty token

The unaudited excerpt below is based on Solidity, a contract-oriented programming language for writing smart contracts. It is used for implementing smart contracts on various blockchain platforms, including Ethereum. Specific royalty features, such as the exact commercial content of the royalty stream, have not been included in this code. This fragment represents the simplest form of token that can be issued on the Ethereum network.

```solidity
pragma solidity ^0.4.18;

contract ERC20Interface {
    function totalSupply() public constant returns (uint);
    function balanceOf(address tokenOwner) public constant returns (uint balance);
    function allowance(address tokenOwner, address spender) public constant returns (uint remaining);
}

contract MiningRoyaltyToken is ERC20Interface, Owned, SafeMath {
    string public symbol;
    string public name;
    uint8 public decimals;
    uint public _totalSupply;
    uint public startDate;
    uint public bonusEnds;
    uint public endDate;
    mapping(address => uint) balances;
    mapping(address => mapping(address => uint)) allowed;

    function MiningRoyaltyToken() public {
        symbol = "MRT";
        name = "MiningRoyalty Token";
        decimals = 18;
        bonusEnds = now + 1 weeks;
        endDate = now + 7 weeks;
    }

    function totalSupply() public constant returns (uint) {
        return _totalSupply - balances[address(0)];
    }

    function balanceOf(address tokenOwner) public constant returns (uint balance) {
        return balances[tokenOwner];
    }
}
```

Source: White & Case, GitHub