



# **Automating royalty contract settlements with blockchain**

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A GuildOne Position Paper

## Executive summary

Royalty administration has been an onerous challenge for oil & gas companies and landowners since the first well was bored on private land.

Producers and royalty owners spend too much time just calculating and checking payments. But when you add the major cost and effort spent resolving disputes, frustration and profit bleeding is endemic.

Fortunately, new technology holds great promise to simplify, automate and reduce administration and disputes in royalty contract transactions. Distributed ledger and blockchain, the technologies behind Bitcoin and other cryptocurrencies, provides what the energy industry needs to stem the flow of unnecessary costs. Now commonly used in the financial and supply chain sectors, distributed ledgers and blockchain offer trust, efficiency and security built into their most basic operating rules.

Guided by two decades of helping energy stakeholders tame the royalty beast, GuildOne has developed a solution based on distributed ledger and blockchain.

In collaboration with NAL Resources Management Ltd. (NAL), PrairieSky Royalty Ltd. (PrairieSky) and ATB Financial (ATB), we are advancing our Royalty Ledger solution past the Proof of Concept (POC) stage to settle real-world royalty calculations. With the recent launch of our POC in early February, 2018, we are well on our way to rolling out an enterprise product and production business network.

Struggling companies and those wanting to leap ahead after prices recover should consider making the paradigm shift: from the basic financial apps and clearing houses they currently use to manage royalties to an automated and dispute-free transaction solution like Royalty Ledger.

## Royalty disputes & revenue loss

We all know the decades-old story, because we're still living it today.

At the giddy outset of a contract, landowners and oil companies agree to terms like revenue split and payment frequency. But from the day they enter those contracts into their separate systems, they will almost always disagree on the details. Armies of people on both sides will spend money, time and energy processing and disputing the interpretation of the contract, the value of produced products at different points in time, the payments owed, and myriad of other elements critical to fair and equitable payments.

The raft of financial apps and hosted invoice clearing houses we use to simplify royalty payments merely prop up the existing contract model while doing nothing to mitigate disputes. We are so inured to counting the administrative loss against profits, we cannot see a way out.

Even with commodity prices rebounding, neither producers nor landowners can afford to let this institutionalized resource burn continue to eat profits. And when prices recover fully, those who have solved this issue will be well ahead of their competition.

## Distributed ledgers bring trust, efficiency & security

The technology behind the Bitcoin cryptocurrency, distributed ledgers enable secure digital transactions and reduce the costs of administration, mistakes and disputes.

Instead of entering contract terms into separate systems, distributed ledgers let the relevant parties encode their negotiated “smart” contract into the same system. The ledger then carries out all subsequent digital transactions based on the agreed-upon terms.

Once made, each royalty transaction becomes a block in a permanent ledger (or chain), making it and its metadata traceable, indisputable, and tamperproof. Third-party approval is less important: trust is inherent in the mutual agreement between the relevant parties.

Distributed ledger concepts and technology are evolving well beyond finance and into other sectors like government, energy and entertainment industries. The concepts carry forward: encoding a smart contract between parties and allowing all transactions to flow from those terms, each transaction an unchangeable record that can be traced to its origins.

An encoded assurance of mutual benefit can be especially valuable for cases involving environmental concerns or indigenous ownership disputes, where equitable sharing of resource profits could help offset some of the downsides of development.

## Royalty Ledger: A smart contract built for energy

Royalty Ledger is GuildOne’s Corda-based solution that brings the trust, efficiency and security of distributed ledgers and smart contracts to oil and gas royalty transactions.

Corda is heavily inspired by and captures the benefits of public blockchain systems, but with design choices that make it able to meet the needs of regulated financial institutions.

Crucially, Corda’s approach to data privacy and security is ground-breaking in the blockchain space, as Corda only sends data to those who have a “need to know.” This unique feature of Corda emerged from the requirements of financial institutions which need to ensure the confidentiality of trades and agreements while also capturing the benefits of a shared distributed ledger infrastructure.

### *Let's get technical*

Blockchain confirms a unique transaction through the consensus of anonymous parties over a probable event. But anonymity and probability do not usually sit well in business.

By contrast, Corda confirms a unique transaction through the consensus of known parties over an absolutely certain event. To do this, it uses a separate ‘consensus service’ to confirm direct, point-to-point transactions between parties.

Royalty Ledger builds on the trust, efficiency and security of Corda's unique smart contract foundation by adding GuildOne's customized business logic for the energy industry. Royalty Ledger's business logic is the product of almost two decades of expertise in computing, analyzing and settling royalty transactions with oil and gas clients, and our deep understanding of the energy industry and legal context.

Together with our partners, operator NAL, royalty holder PrairieSky and financial institution ATB we have created a POC solution that has settled a real-world royalty contract.

## Benefits of Royalty Ledger

### Trusted

Royalty Ledger places a validated and mutually agreed-upon contract at the core of ongoing payment calculations. After both sides agree, the software's business logic, based on current and historical legal conventions and precedents, carries out the transactions. The algorithms are agnostic to any particular energy industry stakeholders, including businesses, individual landowners, corporate royalty owners, and governments.

### Efficient

We expect Royalty Ledger to offer an 80% efficiency gain through trusted, efficient and secure royalty settlements. The employees that currently pull their hair out over royalty disputes can move into more productive pursuits that drive rather than drain revenues.

### Secure

As with Corda, Royalty Ledger restricts information access to the lessor and the lessee—no other parties. Once the relevant parties reach consensus, Royalty Ledger's validated smart contract distributes scheduled royalty payments through ordinary financial transactions, not cryptocurrency.

### Scalable

In POC, Royalty Ledger is expected to scale into the tens of millions of transactions per month. In reality, payments may roll up to a few thousand per month. But since they must be traceable to the individual transaction, this granularity and scalability is critical.

## Building a business network to ensure rights & simplify payments

GuildOne launched the first stage of developing a fully encrypted peer-to-peer royalty business network based on Corda's blockchain, smart contract solution. This network managed by GuildOne is a compatibility zone with companies, governments and landowner groups as multiple nodes on the network. Parties can share secure smart contract codes with other parties on the network to settle royalty contracts and track rights.

## *Let's get technical once more*

GuildOne and R3 believe early distributed ledger concepts limit interoperability, trapping assets in ledgers and hampering free movement outside a small network of predefined entities.

Corda enables an interoperability zone that allows private and secure point-to-point transactions between any nodes or parties. Such a zone is a complex, open, global and private ecosystem of entities where trust is assured by the certificate authority's root.

## Using Royalty Ledger in other industries

This scalable solution can be applied in any domain where owners are paid for their property. Royalty Ledger's ability to encode contracts, compute royalties and enact payments is critical to fields such as innovation, real estate, music and visual arts.

With interest from a number of companies, GuildOne has created a technology that is transferable to other industries with little customization and scalable to internet-level transactions.

## About GuildOne Labs

GuildOne has been reducing churn and errors, fixing broken processes and ensuring revenue completion for Canadian corporations since 2001.

Our Machine Learning and Asset Exchange labs, in collaboration with the National Research Council and fueled by provincial support (Alberta Innovates—Technology Futures), are currently hosting the co-development of distributed ledger and digital asset and exchange ledger technologies for use by government.

Together in collaboration with Massachusetts Institute of Technology (MIT) and the University of Calgary, we are studying broader social questions on technology adoption and paradigm shifts.

## Get in touch

As we evolve our royalty business network, we are interested in talking with potential stakeholders, royalty creators and consumers across the energy industry and beyond. If you would like to know more about carrying out trusted, efficient and secure royalty transactions please get in touch.

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