



Can smart contracts be legally binding contracts?

An R3 and Norton Rose Fulbright White Paper

Key findings

The background of the lower half of the page is a dark red field filled with a complex, abstract graphic. It features numerous overlapping, semi-transparent red circles and arcs of varying sizes and orientations, creating a sense of depth and movement. Interspersed among these shapes are faint, glowing red binary digits (0s and 1s), suggesting a digital or data-driven theme.

“Distributed ledger technologies show us how to create cryptographically secured consensus over shared facts, and give us exciting new ways to construct what some have called the golden copy of records. Not only do these technologies promise great savings through the life cycle of financial transactions, but the ability to reach shared consensus serves as a fundamental building block for smart contracts, which will set the scene for the next twenty years of finance. Yet technology solutions alone cannot realize the promise of smart contracts. They must be designed to ensure legal enforceability, with the strength of contractual law, globally, between all our members. I put it to my team to construct a legally defensible global shared record, and they are delivering.”

David Rutter, CEO, R3

“Smart contracts in combination with distributed ledger technologies have the potential to automate an extensive array of transactions and services within the financial services sector. Legal compliance can be built into the program logic, providing a way of transacting that maximises operational efficiencies with the potential to reduce legal and regulatory cost and risk.”

*Sean Murphy, Global head of Blockchain and Distributed Ledgers,
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Introduction

There is much excitement globally about smart contracts and distributed ledger technologies that support them. Properly funded technology vendors and consortia have emerged which are now able to give tangible expression to that sense of excitement in the form of new and innovative smart contract and distributed ledger products and services.

It has become apparent to us, however, that when industry stakeholders (both buyers of the new technologies and vendors) speak of smart contracts, they can mean very different things. As any contracts lawyer will tell you, words matter. Consistency of language is vital if clear lines of communication are to be achieved in a rapidly evolving industry. What do we mean by a smart contract? Is it smart? Is it a contract? Do lawyers and technologists understand each other when they use these terms?

Recognising the imperative for clarity on these issues, R3 and Norton Rose Fulbright offer this White Paper as a step forward in forging a consensus of understanding between industry stakeholders, lawyers and technologists in relation to smart contracts.

Executive summary

This White Paper assumes the reader will be broadly familiar with smart contracts and distributed ledger technologies. It accordingly provides only a high level summary of both (including permissioned and permissionless systems), before moving on to consider the spectrum of possibilities of what a smart contract could constitute. It then considers whether a smart contract can constitute a legally binding contract under the law of a number key contracting jurisdictions. Finally, it offers up some observations about the practicalities of enforceability and provides some suggestions for dispute resolution within a smart contract context.

Our key findings are:

1. There is a spectrum of possible smart contract models

On the one hand, there are those who promote the “code is contract” approach (that is, that the entirety of a natural language contract can be encoded). On the other, there are those who see smart contracts as consisting of digitising performance of business logic (for example, payment), which may or may not be associated with a natural language contract. In between these two extremes a number of permutations are likely to emerge including, for example, a “split” smart contract model under which natural language contract terms are connected to computer code via parameters (for example, a smart contract template) that feed into computer systems for execution.

2. Legally binding contractual effect depends on a number of variables

It is tempting to conclude that, just because the moniker “smart contract” includes the word contract, it is a legally binding contract as a matter of law. This is not necessarily correct. Whether it is so in a given situation may turn in part on the type of smart contract at issue, the factual matrix within which it operates, and the applicable law determining the issue.

3. There are jurisdictional variations

At the end of this White Paper we set out an analysis of whether smart contracts can give rise to legally binding contractual relations under the laws of a number of key contracting jurisdictions. Our analysis reveals that the answer may vary significantly depending on the jurisdiction.

Common themes

- The electronic nature of contracting is unlikely to be problematic for many (but not all) jurisdictions in relation to establishing contractual formation.
- Certainty as to what constitutes the contractual terms (and whether they are comprehensive enough) is often a critical factor necessary to establish the formation of a legally binding contract in many jurisdictions. Smart contracts that purely digitise a particular process but do not include, or operate in conjunction with, contractual terms (express or implied) may not satisfy such requirements.
- Follow-on contracting (by which a later, separate “follow-on” contract is brought about by performance of an earlier smart contract) may not give rise to a legally enforceable contact in some jurisdictions.
- Other technical requirements of the applicable jurisdiction’s law (typically prescribed by legislation) may, in a few jurisdictions, be a potential impediment to rolling out smart contracts that are intended to have legally binding contractual effect.

4. Enforceability should be considered

Where a smart contract has legally binding contractual effect, the technology within which it is deployed may sometimes give rise to problems in relation to legal enforceability (this is particularly so in the case of a so-called “permissionless” distributed ledger). This may be because, for example, there may be no central administering authority to decide a dispute, there may be no obvious defendant, or enforcement of a court judgment or arbitration award in respect of a transaction using particular distributed ledger technologies may be problematic.

5. Dispute resolution mechanisms could address enforceability and jurisdictional variations

Inserting a dispute resolution mechanism into a smart contract may help to address the issues around enforceability and jurisdictional variations identified in this White Paper. Later we suggest some dispute resolution mechanisms that could help to provide a solution.

Many of the problems identified above may also be addressed by choosing a smart contract model that reduces the risk of a court finding that a legally binding contract has not arisen (assuming that is an objective of the parties).

Businesses need to factor issues concerning the legal status of smart contracts into the wider business case for their deployment, and ensure an appropriate legal and regulatory compliance review of the particular smart contract model chosen has been undertaken for the countries in which they are intended to operate.

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R3 is leading a consortium with over 70 of the world's largest financial institutions to develop ground-breaking commercial applications for the financial services industry that leverage the appropriate elements of distributed and shared ledger technology.

Operating in New York, London and San Francisco, the R3 team is made up of financial industry veterans, technologists, and new tech entrepreneurs, bringing together expertise from electronic financial markets, cryptography and digital currencies.

The R3 Lab and Research Centre has quickly become a centre of gravity for collaborative research and testing of distributed and shared-ledger inspired technologies, and is where R3 works with its partners to define, design and deliver the next generation of financial infrastructure.

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