

An abstract graphic featuring a complex network of glowing blue lines and dots, resembling a digital or blockchain network, set against a dark background. The lines and dots are interconnected, forming a web-like structure that fills the upper and right portions of the image.

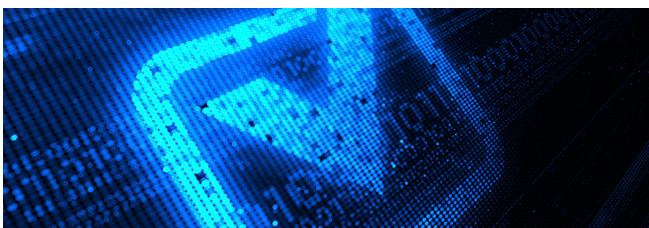
BLOCKCHAIN AND SMART CONTRACTS: DIGITAL UTOPIA VERSUS THE REAL WORLD

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BLOCKCHAIN AND SMART CONTRACTS HAVE SET US ON A COLLISION PATH – BALANCING THE CERTAINTY OF THE DIGITAL WORLD AGAINST THE AMBIGUITIES OF THE COMMERCIAL LANDSCAPE

People with technology, commercial and legal expertise all need to work together in the blockchain environment – and their expectations can be quite different:

- + There are those who believe in a digital utopia, where everything can be converted into code – and arguably, the digital world would solve the ambiguities and uncertainties of traditional legal frameworks.
- + At its most extreme, this would require us to “live or die” by the code, regardless of the risk of coding errors. In fact, there are people who believe that the recent DAO incident was just a teething issue (with coding errors being exploited to siphon away approximately US\$50 million) – and that any risks around coding errors will disappear over time.
- + On the other hand, there are commercial operators who recognise that complexity, ambiguity and uncertainty are an inevitable part of commercial life (for better or worse).
- + There will always be issues that are left unsaid or remain vague in contractual agreements – partly because of the practicalities of getting the contract done, and partly because the parties may deliberately prefer this approach.
- + And just because you *can* code something, this doesn’t necessarily mean that you *should* code it – there is always the question of whether the benefits stack up?



A COLLISION PATH: TRANSPARENCY VERSUS CONFIDENTIALITY

We are also seeing very real challenges in our day-to-day client work on blockchain around the collision between transparency and confidentiality:

- + Blockchain technologies are all about transparency – they were initially established for shared databases, in which everyone sees what everyone else is doing. This transparency of the blockchain ledger is a key benefit. In addition, transaction updates are validated by multiple participants on the blockchain ledger, thereby establishing the required level of trust.
- + However, as we move from public to private blockchains, the goal is to leverage all the benefits of the blockchain environment – while at the same time achieving required levels of commercial confidentiality. This is a complex area that is evolving in practice. Added: “both in terms of the technology solutions available and expert views about what is and is not suitable for the blockchain environment.”
 - Some people are taking the extreme view that you simply shouldn’t put any confidential information on the blockchain ledger.
 - In the meantime, new technologies are emerging to solve the problem – both around confidentiality, as well as new options for consensus and validation of transactions on the blockchain ledger.

SO, SMART CONTRACTS AND CONTRACTUAL AGREEMENTS: WHAT IS THE DIFFERENCE?

SMART CONTRACTS PROVIDE THE LOGIC IN THE BLOCKCHAIN ENVIRONMENT – WITH OPPORTUNITIES FOR FAR GREATER AUTOMATION THAN WE HAVE EVER SEEN BEFORE. HOWEVER, SMART CONTRACTS ARE NOT CONTRACTUAL AGREEMENTS.

Without a smart contract, we couldn’t exploit the full potential of the blockchain environment. Smart contracts are the computer programs that automatically execute processes to effect changes on the blockchain ledger.

By comparison, a contractual agreement is about the intentions of the parties, and those intentions can be far broader in scope than just automated processing. And the terms of contractual agreements can be manifest in many different ways: in writing, verbally, by conduct, by smart contract coding on the blockchain ledger – or by any combination of these.

WHERE DO SMART CONTRACTS FIT INTO THE CONTRACTUAL AGREEMENT?

Smart contracts are about more than just coding and automation of contractual terms:

- + Smart contracts perform a role that is rather like that of a trusted third party - they will faithfully perform whatever tasks they are programmed to do in the blockchain environment.
- + A unique feature of the blockchain is its environment of “trust” - achieved through consensus mechanisms and hashing algorithms. The participants on a blockchain ledger can validate every row in every record on the blockchain ledger, without the need for a central validator. This makes the blockchain ledger tamper-proof – immune to risks of fraud and corruption. It also makes the blockchain ledger an ideal platform for the automated execution of contractual terms.

In this environment of trust, smart contracts are “self-executing” and “self-enforcing”. Participants can trust the results of this automated processing – which could never happen in a traditional environment without a central gatekeeper to manage the database.

“However” Smart contracts don’t replace contractual agreements. They only replace those parts of the arrangement that are suited to automated processing – which means that they are really no more than “smart transactions”.

A contractual agreement can be far broader in scope, setting out the intentions of the parties in relation to matters such as:

- + the rules for working together as a consortium on a private blockchain, or participating in services infrastructure that utilises a blockchain;
- + the rules for managing decision-making around ongoing changes (eg: regulatory changes; technology changes on the blockchain platform, etc.);
- + handling coding errors; and
- + disputes

Many other contract terms are not “deterministic” and can’t easily be coded – although the scope of terms converted into pre-determined logic and code will inevitably expand over time.

NEW APPROACHES TO CONTRACTING IN THE BLOCKCHAIN ENVIRONMENT

Contracting in the blockchain environment is not simply a matter of replacing traditional contracts with smart contracts. It inevitably requires a mix of both smart contracts and contractual agreements – with new approaches evolving to address:

- + the practical challenges, risks, technologies and operational processes of the blockchain environment;
- + the importance of facilitating ongoing change and agility in this fast-moving environment; and
- + the uncertainties and ambiguities of the commercial world, including specific requirements for more complex commercial arrangements on private blockchain platforms, working within private consortiums.

