Can You Patent the Blockchain? That Depends.

A look at issued blockchain patents reveals that how something is inventive can matter as much as whether it is inventive in the first place.

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Can you patent your blockchain? Maybe: fifty blockchain-related patents issued in just the first half of 2018. But *how* something is inventive can matter as much as whether it is inventive in the first place.

Some inventions can't be patented. Under 35 U.S.C. § 101, a patent may issue for "any new and useful process, machine, manufacture, or composition of matter". These categories do not span the full range of human ingenuity; for example, they exclude transitory propagating signals.

The courts have also held that laws of nature, natural phenomena, and abstract ideas are not patentable. Their applications may be patentable—indeed, every invention must apply laws of nature, natural phenomena, and abstract ideas. But substance matters, not just form, and a claim that amounts to "apply the abstract idea" or "a machine that embodies the abstract idea" is unpatentable as directed to the idea itself.

The judicial exceptions have received extra attention following a series of decisions by the Supreme Court that led up to CLS Bank v. Alice Corp. in 2014. In Alice, the Court held that an abstract idea does not become patentable just because it is claimed in a form that amounts to "apply the abstract idea using a general-purpose computer". The decision led to invalidation of many computer-related patents.

Alice complicates patenting blockchains. Fundamentally,

a "blockchain" is a data structure; it is a sequence of data blocks that is secured cryptographically. Each block holds data about transactions, where a "transaction" doesn't have to be financial, but can be any kind of recordable event. At some point, a block closes, and all later transactions go into the next block.

For example, each block in the Bitcoin blockchain spans ten minutes. All transactions in that span are recorded in that block. When the interval ends, the block is closed and time-stamped, and all new transactions are recorded in the next block.

Each block also includes a "cryptographic hash" that uniquely identifies the entire contents of the previous block. Every block includes the hash of the preceding block, which in turn includes the hash of the block that preceded it, and so on. Any change to any block reveals itself in discrepancies in the hashes.

A data structure is not a "process, machine, manufacture, or composition of matter." But it can often be claimed, for example, as a computer programmed to create or maintain the data structure. And

"blockchain" often extends to things other than a data structure:

- An instance of a blockchain in some computers' storage
- A protocol that includes a blockchain
- A distributed ledger embodied in blockchains
- A cryptocurrency (e.g., Bitcoin) built on such a blockchain

Any of these can potentially be patent-eligible if disclosed and claimed as something other than an abstract idea. The catch is that no one knows for sure what an "abstract idea" is; the Supreme Court has refused to define it. Some principles have begun to emerge from the Federal Circuit, though:

- Inventions that improve computing or related technologies are generally patent-eligible.
- Conversely, merely computerizing an existing business practice is generally unpatentable.
- Inventions that are novel mostly in their handling of human relationships, including financial or legal obligations, are also generally unpatentable.
- Automating earlier practices may be patentable when the

inventiveness lies in solving a problem that arises because of automation.
- Patentability can arise from using known, conventional systems in unconventional ways.

Applying these principles to blockchains suggests some guidelines for patenting them.

First, improvements that are embodied in special-purpose hardware are particularly likely to be patent-eligible. Almost by definition, a claim directed to novel, special-purpose hardware is not directed to applying an abstract idea on generic computer hardware.

For example, U.S. Patent 9,942,046 relates to a special-purpose circuit for cryptocurrency "mining." No central authority controls Bitcoin; rather, nodes in the Bitcoin network algorithmically reach a consensus. To prevent faking that consensus, each block must contain proof of a solution to a computationally-difficult problem involving the data in the block, on the assumption that no bad actor can falsify enough blocks to take over the chain. Solving the problem is called "mining", and it uses massive and growing

amounts of hardware and electricity.

Improving the implementation of blockchains—e.g., improving security or making processing or indexing faster or more efficient—is likely to be patent-eligible. U.S. Patent 9,875,510 claims decentralized blockchains that maintain consensus without mining. The solution was asserted to reduce the power consumption of the blockchain network while making it more secure.

Using a blockchain in a new way, in an unconventional configuration, or to enable a new kind of transaction or relationship *may* be patentable. Look to, e.g., decentralization of trust, pseudonymous participation in the network, self-executing contracts, or ability of public to audit transactions. What is being done with a blockchain that could not have been done without one?

A "smart contract" includes computer code, which is recorded as part of a transaction and automatically transfers an asset upon specified conditions. For example, U.S. Patent 9,934,138 claims the use of smart contracts to arrange for software tests. Test cases are distributed via a blockchain, which automatically compensates the testers after they run the tests and upload the results. In contrast, U.S. patent application no. 14/295,279 claimed cryptocurrency transactions between users of a social network, as such, and was rejected as an abstract idea.

Mere replacement of an ordinary database with a blockchain probably will not be patentable. U.S. Patent 9,836,908 was rejected at first as drawn merely to the abstract idea of using a blockchain to store voting data. The applicants overcame the rejection by adding limitations connecting the storage of specific voting data to elements of a customized blockchain.

These examples show that how a blockchain-related invention is characterized can determine its patent-eligibility. Many such inventions can be claimed in more than one way, though. The essentials to success are a deep understanding of the invention and the creativity to look at it from varied perspectives.

Jon Gordon is a partner in the New York office of Haug Partners LLP. Clients rely on his extensive experience in patent law, with particular expertise in prosecuting patents related to computers, networks, telecommunications, medical information systems, and financial applications. Those clients include major, well-known U.S. and foreign corporations and also entrepreneurs and individual inventors. Engineers and developers work directly with Jon to identify the essence of their inventions and to ensure that the resulting patent application accurately describes and fully protects their work.