Practical aspects of patenting distributed ledger-related inventions

Dmitry Andreev discusses issues in patenting blockchain-related technologies, and explains how to avoid the most common grounds of rejection

Distributed ledger technology is arguably still in its nascent stage, as evidenced by the exponential growth of blockchain-related patent filings and high patent issuance rates since the inception of the technology and until these days. Figure 1 shows graphs illustrating yearly numbers of blockchain-related published US patent applications and issued US patents starting from 2011. Since, under US patent law, patent applications are published at approximately 18 months from the earliest priority date, the published application numbers for 2016 and 2017 have been extrapolated based on the data available at the time of writing. Based on the author's analysis of published US applications and issued patents, the application pendency term (from application filing until patent issuance) is approximately three years, which is close to the lower end of pendency term distribution of all broadly defined computer-related inventions.

The issuance rate (i.e., the ratio of the number of issued patents to the number of filed applications) may be visually analysed by aligning the filing and issuance graphs of Figure 1 along the time axis based on the estimated pendency term of three years, thus producing the graphs of Figure 2. As can be seen from the time-aligned filing and issuance graphs, the issuance rate for earlier-filed applications (up until 2015) is close to 100%, which may be explained by the scarcity of relevant prior art that can be seen in emerging technologies. Starting from 2016, however, the graphs are starting to diverge, thus leading to the estimated issuance rate of approximately 70% in 2017, which may be attributed to the technology approaching its maturity.

1 MINUTE READ

An analysis of blockchain-related published US applications and issued patents reveals the application pendency term (from application filing until patent issuance) is approximately three years, near the lower end of all broadly defined computer-related inventions. A scarcity of relevant art resulted in about 25% of all filed blockchain-related applications being allowed by the first office action. Most of the remaining applications received at least one obviousness rejection. The obviousness-related challenge is acutely applicable to blockchain-related patents unless the claimed invention is related to an improvement to the core distributed ledger technology itself. The probability of receiving an obviousness rejection may be reduced by directing the claims to integrating the application functionality with the distributed ledger. Furthermore, a significant portion of applications received a subject matter eligibility rejection, which is based on the judicially created doctrine of an "abstract idea".

Figure 1. Blockchain-related applications and issued patents

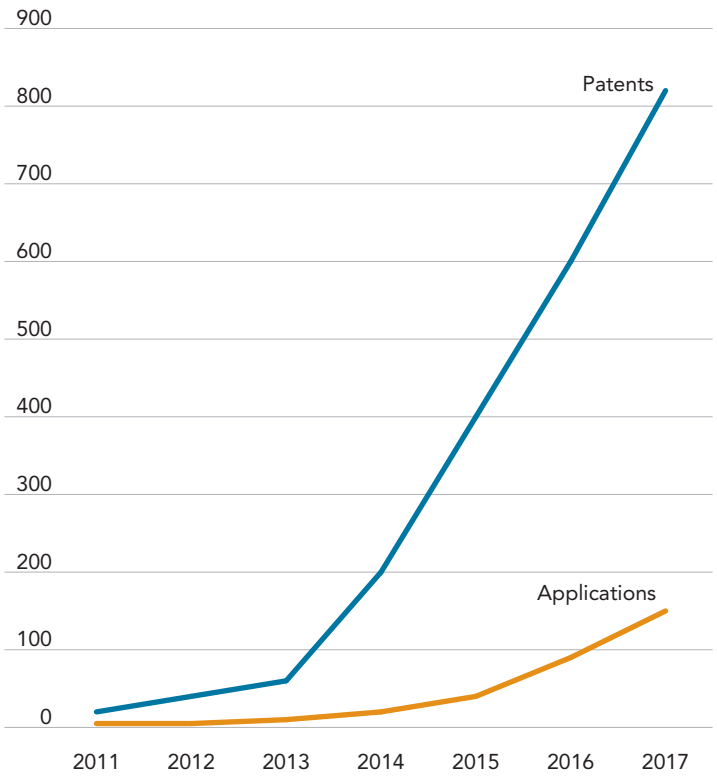
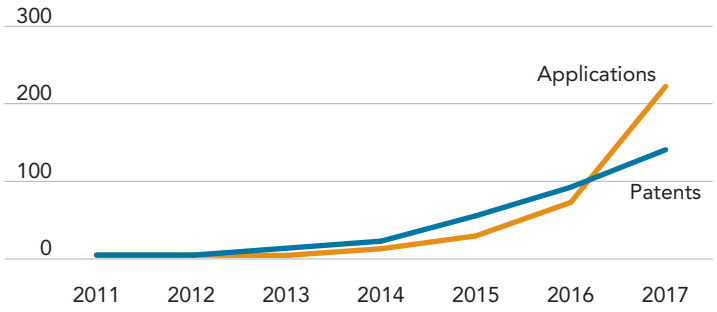


Figure 2. Blockchain-related applications estimating issuance rate



The scarcity of relevant art resulted in approximately 25% of all filed blockchain-related applications having been allowed by the first office action

Under the relevant law, patent claims are allowed and a patent is issued if the patent examiner finds the claims being directed to statutory subject matter (a process, a machine, a manufacture, or a composition of matter) and is not able to identify any prior art that would anticipate the claims or render them obvious. The above-noted scarcity of relevant art resulted in approximately 25% of all filed blockchain-related applications having been allowed by the first office action.

Most of the remaining applications received at least one obviousness rejection (when the patent examiner finds that a person reasonably skilled in the relevant art could have arrived at the claimed invention by combining the teachings of two or more prior art references). Furthermore, a significant portion of applications received a subject matter eligibility rejection, which is based on the judicially created doctrine of "abstract idea".

Advice on mitigating risk of rejection

The obviousness-related challenge is acutely applicable to blockchain related patents: unless the claimed invention is related to an improvement to the core distributed ledger technology itself, it would almost necessarily describe a known application (for example, payment processing systems, security exchanges, title registries, digital rights management systems, and so on) which is implemented in a distributed ledger environment, thus falling squarely under the Supreme Court definition of obviousness. This states that: "[T]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results", as outlined in the court's *KSR International v Teleflex* opinion in 2007.

As a practical matter, the probability of receiving an obviousness rejection may be significantly reduced by directing the claims to integrating the application functionality with the distributed ledger; such integration means have a better chance of being novel and non-obvious even if the application functionality to which the distributed ledger technology is being applied is not novel. For example, such integration means may utilise a software-implemented adapter that would translate the application-specific protocol to a blockchain-friendly form. Another viable way of avoiding an obviousness rejection may involve directing the claims to enabling and/or augmenting the application functionality in the distributed ledger environment, for example, by utilising a novel data structure for converting the application-related data to a distributed ledger-recordable format.

The subject matter eligibility rejections are based on the seminal Supreme Court *Alice v CLS Bank* case in 2014 holding that claims directed to an abstract idea are not patentable unless the claims describe "significantly more" than the abstract idea itself, since upholding such claims "would preempt use of this approach in all fields, and would effectively grant a monopoly over an abstract idea." However, the Supreme Court decision did not provide any bright line test for the "abstractness," thus forcing the lower courts and patent examiners to implement the holding by "compar[ing] claims at issue to those claims already

found to be directed to an abstract idea in previous cases" (*Enfish v Microsoft* (2016)).

Unfortunately for many blockchain-related inventions, the claims at issue in *Alice*, which recited a method of intermediate settlement, were found to be directed to "a fundamental economic practice long prevalent in our system of commerce," which has resulted in the USPTO examining corps almost universally rejecting any claims that even remotely mention a financial application.

The risk mitigation strategy for subject matter eligibility rejections may be based on the Supreme Court dictum in *Alice* noting that "claims that integrate these exceptions into an inventive concept are thereby transformed into patent-eligible inventions." Such "inventive concept," as explained by a lower court, "can be found in the non-conventional and non-generic arrangement of known, conventional pieces" (*BASCOM Global Internet v AT&T Mobility* (Fed. Cir. 2016)).

In particular, claims reciting certain steps that depended upon the "system's unconventional distributed architecture" were found patent-eligible by the Federal Circuit in *Amdocs Israel v Openet Telecom* in 2016. Thus, in a blockchain-related patent application, it is extremely important to explain how the system's distributed architecture enables the claimed method to achieve the desired result, and emphasise the advantages of the claimed systems and methods over various common implementations.

As a practical matter, the probability of receiving an obviousness rejection may be significantly reduced by directing the claims to integrating the application functionality with the distributed ledger

The above-described high-level guidelines are far from being universally applicable or exhaustive. As we noted at the beginning of this article, the technology is still emerging, and the number of related patent filings growing exponentially. We will undoubtedly be witnessing further exciting developments in this area of technology, which may lead to further developments in relevant patent law and practice.

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