Patent Hub: Facilitating the process from idea to filed patent by maintaining an unforgeable document history and handling payments using DLT

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Patents are an important tool to recompense companies with a first-to-market approach (WIPO, 2007). In a free market, innovative products are quickly reverse engineered by competitors (WIPO, 2007). These competitors then often find a way to manufacture the product at lower cost, outpacing the original company (WIPO, 2007). By harnessing intellectual property rights, a company may prohibit others to manufacture its products, or maintain a stream of revenue by "[...] *licensing revenues that represent a healthy fraction of what its own profits would be for selling the product*" (WIPO, 2007). The enforceability of a patent lasts 20 years from filing for the patent (UHH, 2015). Ensuring that innovative companies receive the benefits for their inventions incentivizes larger investments of resources into research and development (Cornelli & Schankerman,1999).

Despite the multitude of ways to a successful patent creation, the process usually contains the same key components (compare Figure 1). Initially, one or more inventors work on a product. When they deem their idea appropriate for a patent, they negotiate a distribution of ownership shares. Thereafter, a "patent agent" — either one of the inventors or a hired attorney — manages the patent creation (WIPO, 2007). The patent agent starts with a "patent prosecution": the validation of the novelty and patentability of the idea (WIPO, 2007). If the product idea is valid, he drafts a patent proposal (WIPO, 2007). The patent agent can contract external service providers such as drawers for the required format of patent drawings (WIPO, 2007). Once a draft exists, "nationalizers" (also referenced as "local patent agents") adjust the drafts to specific jurisdictions and submit a patent proposal to the local patent office (WIPO, 2007). Nationalizers in turn may also contract service providers such as translators or payment providers. Payment providers know jurisdiction-specific fees and their deadlines, patent annuities and act as escrows in the handling of payments.

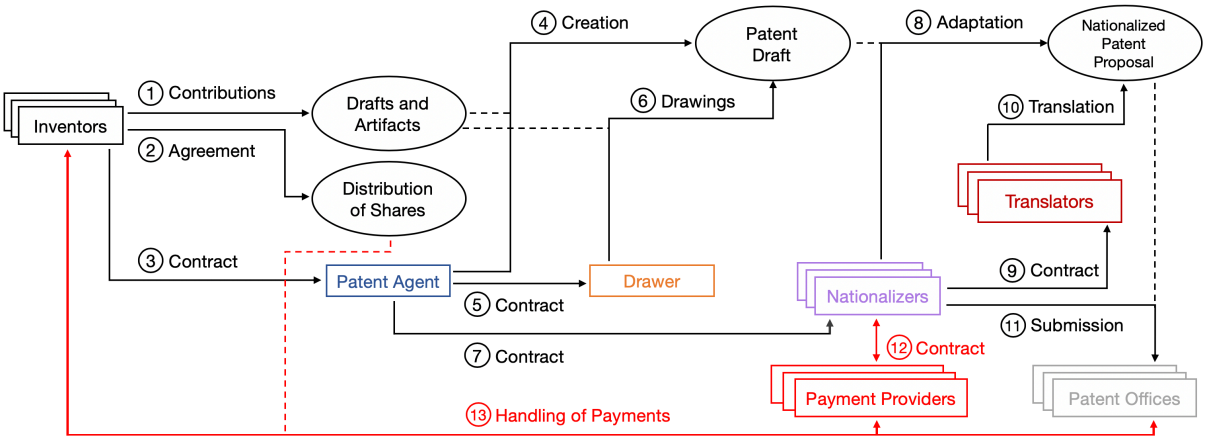

Figure 1: The patent creation process (own illustration)

When executed in practice, the examined patent creation process displays several shortcomings. Advantages of recent distributed ledger technologies (DLT) such as resistance to manipulation and system failure, the enhanced trust through the removal of central authorities or decentralized code execution may offer a solution to issues in judicial decisions (Ølnes et al., 2017). In the following paragraph, the weaknesses of patent processes and their potential solution through DLT will be presented.

First, the stakeholder "payment provider" represents unnecessary financial overhead. Once all relevant data for the handling of payments is stored on a Blockchain, such inefficiencies can be streamlined with automatic payment execution via smart contracts. Second, in case of patent infringement litigations, courts act in accordance with the principle of public notice (Risch, 2007). Therefore, the inventors' testimony is often not heard as only the public patent document is considered (Risch, 2007). However, executing the key components of the patent creation process on a Blockchain creates a public, unforgeable history of all contributions. This history may help bring more proof and credibility to the inventors' testimony in the event of litigations. Finally, a Blockchain solution offers the ability to create decentralized consensus on certain facts of the application domain. Two facts that benefit from the added verifiability are the distribution of ownership shares amongst the inventors and an automatically derived patent dependency graph for a given patent.

The goal of this project was to design a system architecture that leverages the advantages of DLT with respect to the identified issues in the patent creation process. The methodology we applied to achieve this consisted of two major parts. In the first part, we researched several articles about state-of-the-art patent creation processes. With this information and feedback from our partner Vladimir Juric from Tivity, we designed a new, refined Blockchain process for patent creation. In the second part, we implemented this process in a fully working Ethereum proof-of-concept application. Based on this prototype, we evaluated the advantages and disadvantages of DLT in the patent use case.

Resources

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