

The Scalability of Trustless Trust

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Abstract. Permission-less blockchains can realise trustless trust, albeit at the cost of limiting the complexity of computation tasks. To explain the implications for scalability, we have implemented a trust model for smart contracts, described as agents in an open multi-agent system. Agent intentions are not necessarily known and autonomous agents have to be able to make decisions under risk. The ramifications of these general conditions for scalability are analysed for Ethereum and then generalised to other current and future platforms.

Keywords: Trustless trust, smart contract, agent, Ethereum, blockchain, scalability, multi-agent system, distributed ledger