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## Investigating distance bounding for delegated proof-of-proximity consensus within IIoT

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### Abstract

With limited processing, energy and storage along with a deadline sensitive operational environment, the combination of the Industrial IoT (IIoT) with distributed ledger technologies (DLTs) could serve to introduce intolerable latency into network processes; counteracting the potential advantages that come from combining the two technologies. In an effort to improve the compatibility of DLTs for the industrial informatics context, the authors developed a lightweight consensus for IIoT environments based off delegated proof of stake (DPoS), called Delegated Proof of Proximity (DPoP), to limit the processing and energy effort required by DLTs. DPoP will, however, require an existing, IIoT neighbour discovery process to facilitate a proof of proximity for the consensus process. Thus, this preliminary work aims to evaluate distance bounding as a possible mechanism for establishing a secure proof of proximity and neighbour discovery between nodes during the DPoP consensus process to improve the scalability and flexibility of DLT solutions, like Ethereum, for IIoT use cases.