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Sharing pandemic vaccination certificates through blockchain

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Sharing pandemic vaccination certificates through blockchain: Case study and performance evaluation

Abstract: During 2021, different worldwide initiatives have been established for the development of digital vaccination certificates to alleviate the restrictions associated to the COVID-19 pandemic to vaccinated individuals. Although diverse technologies can be considered for the deployment of such certificates, the use of blockchain has been suggested as a promising approach due to its decentralization and transparency features. However, the proposed solutions often lack realistic experimental evaluation that could help to determine possible practical challenges for the deployment of a blockchain platform for this purpose. To fill this gap, this work introduces a scalable, blockchain-based platform for the secure sharing of COVID-19 or other disease vaccination certificates. As an indicative use case, we emulate a large-scale deployment by considering the countries of the European Union. The platform is evaluated through extensive experiments measuring computing resource usage, network response time, and bandwidth. Based on the results, the proposed scheme shows satisfactory performance across all major evaluation criteria, suggesting that it can set the pace for real

implementations. Vis-a-vis the related work, the proposed platform is novel, especially through the prism of a large-scale, full-fledged implementation and its assessment.

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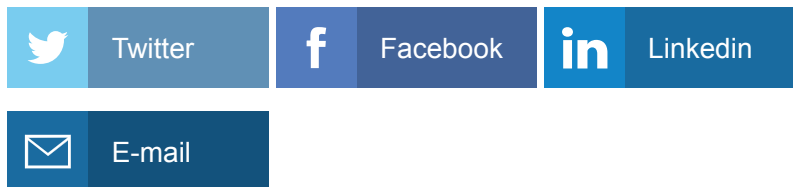
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