

# GDPR Compliant Blockchain and Distributed Ledger Technologies in the Health Sector

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## 1. Introduction

In 2018, The European Union instituted the General Data Protection Regulation (GDPR), which regulates the collection, processing, and securing of personal data, including protected health information (PHI). As detailed by the European Union Blockchain Observatory and Forum [1], in principle, there are no contradictions between the goals of GDPR and Distributed Ledger Technologies (DLT). However, there seems to be at least three areas in which GDPR still does not offer enough clarity about how real-world DLT applications for the health sector should be developed. These areas include (1) accountability and roles (eg, how to identify a data controller in a public DLT), (2) anonymization of personal data (eg, what techniques are sufficient to anonymize personal data to the point where the resulting output can potentially be stored in a DLT), and (3) GDPR rights conflicts (eg, how to rectify or remove personal data that are recorded in a DLT that is immutable by nature, or who is responsible for requesting and managing the “freely, specific, informed, and unambiguous” consent from a data subject, especially if the data controller is not specified) [2]. With regards to anonymization of personal data, it is clear that GDPR does not apply to anonymized data and that this type of information can be stored on the DLT. However, what qualifies as anonymized is still not clear. The only indication today is that it must be irreversibly impossible to identify an individual through any of the means “reasonably likely to be used” [3]. The objective of this study is the dissect the various designs of DTL and look for GDPR compliance for the different components in established or proposed blockchain/DTL applications that deals with health data.

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## 2. Method

A comprehensive review over the current GDPR official documents and other reports that touch upon the subject, including the report developed by the EU blockchain Observatory and Forum [1]. Furthermore, a summary of peer-reviewed publications under the topic and retrieval of white papers for proposed applications in the health sector. Literature reviews of high quality that summarize the current state-of-art and state-of-knowledge should be explored. Summarize the key aspect of the reviewed literature and the key components of blockchain/DTL will be based on peer-reviewed summaries/literature reviews.

## 3. Results

Our preliminary results indicate that there are several areas where blockchain/DTL in the health sector may face challenges when it comes to GDPR. More specifically, a public blockchain that contains on-chain data related to an individual's health, faces serious challenges when guaranteeing the anonymization of that data.

## 4. Discussion

There are clear indications that careful considerations should be undertaken when designing a blockchain infrastructure that deals with health data, to comply with the current GDPR. As previous research shows, the developer of a blockchain system has several important design decisions to make that affect the privacy, access and accountability of the system. It is of high importance to consider the GDPR and especially the three areas mentioned in the introduction.

## 5. Conclusion

How blockchain and DTL comply with current regulations for health data have been suggested to be one main barrier for implementation of these technologies in the health sector. Our preliminary result shows that when certain design choices are made, blockchains and DTL for the health sector may not only comply with the current GDPR but will contribute to reinforce the regulations.

## References

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