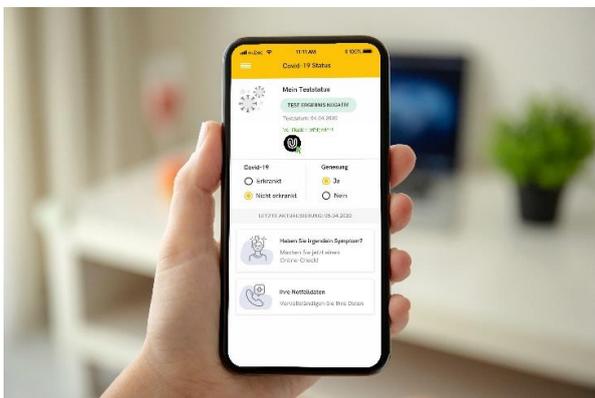# Digital Corona Health Certificate

To enable a quick restart of the economy, we are proposing an IT infrastructure that anchors the corona status* and other relevant data of a tested person in a blockchain, thus making it accessible to all parties – healthcare system, patients, businesses – at any time and across supported applications. This will make it possible to provide people with a health certificate comparable to a "digital corona vaccination pass". Our solution will include a full guidance of test persons through the process, starting from authentification to communication with and monitoring of positive tested patients.

In the coming months, the presentation of an unimpeachable authentic medical corona test result e.g. to authorities, employers, in clinics or at safety-critical locations will become a crucial element for the economy to start up and for the return to a normal social life. Furthermore, recording treatment-related information from Covid19-patients will be critical for managing the healthcare system and allowing research in the best way.

A privacy friendly implementation will also be crucial to avoid harm to civil society and fundamental rights.

We, a consortium of medical device manufacturers, laboratories, clinics, clinical data management systems and blockchain solution providers, present a solution that creates a verifiable chain of process results from the provisioning of a medical sample, its handling in clinics and other locations, through the process of (semi-)automatic laboratory tests, to the submission to requesting authorities. On top of these test-results, a platform for professionals and test persons is provided, enabling bidirectional communication and collection of treatment related and health-status information from patients to facilitate research for an effective vaccine.

Our proposal is based on a process certification anchored in the blockchain, which begins with the processing of patient data, provided by mobile solutions from Healex and m.Doc, and with the collection of a medical sample. The medical sample is linked to a pseudonymous identity of the patient at the test centre. This pseudonymous identity is generated by an identity provider, which can be a Self Sovereign Identity (SSI) Application (an approach to manage identities and related data in a decentralized and privacy friendly way). The pseudonymous identity in conjunction with the sample is used throughout the following process and anchored by UBIRCH in the blockchain at govdigital to ensure that a time stamp is also recorded for the collection. Any step that adds or changes information to the sample is also anchored in this way, as well as any treatment related data that can be added to the system. Govdigital , a cooperative of 10 IT service providers from the public sector (federal, state and local), offers this service as part of their trusted and secure blockchain infrastructure for services of general interest.

The verified test result is displayed inside the mobile patient tools provided by Healex or m.Doc, where patients can keep a Covid-Diary with structured vital and symptom data and receive guidance. Patients
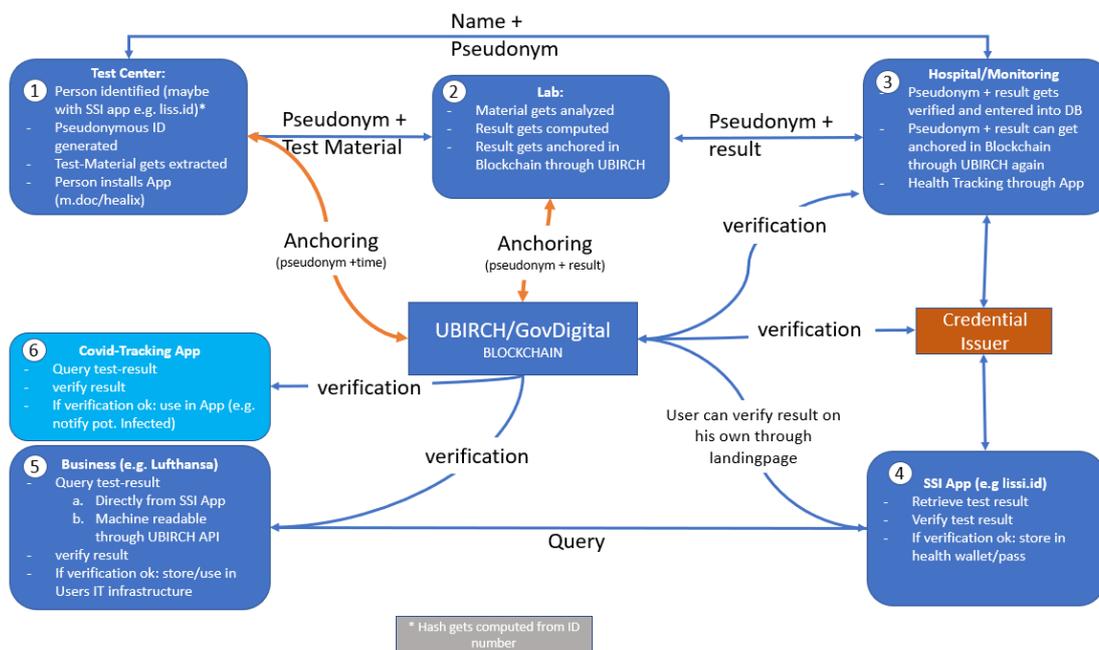
can interact with professionals (clinics, health departments) through a chat, notifications and video consultation. Data can be transmitted to Healex for establishing a Covid-Database.

To ensure that the chain of events can be verified, the hash of the anchored data can be used for verification by any party processing the sample (e.g. at the laboratory providing receipts of samples and test results. Important: The test results themselves are not anchored in the blockchain. They are forwarded to the clinic or directly to the patient, as required by law, who can now verify the results and chain of events.

At this point, a compressed version of the result can be loaded into the LISSI application provided by the Bundesdruckerei, e.g. as a verified proof, and presented if required. Similarly, the system could be linked to access control systems at production plants, airports or other locations.

The following figure shows the data flow between the relevant stations/stakeholders of the system and the interplay of anchoring and verification against the blockchain:

How does this solution relate to tracing apps such as PEPP-PT?

Tracing apps are just as reliable as the data they work with. Our solution generates verifiable, certified test results that can be fed into any tracing app, so that no false alarms are generated. Furthermore, it would be possible to store important results from a tracing app as well as the corona test results in the blockchain.

The following partners currently support the initiative: