

Press release

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Identity and Rights Management: Cognitive Database CortexDB as the basis for Bundesdruckerei's blockchain concept

The CortexDB - the core of the CortexPlatform - forms the basis for a new development by the German Bundesdruckerei GmbH. Bundesdruckerei is running the FIDES development project in cooperation with Cortex AG from Hanover. The user-centered identity and rights management system is based on a modified blockchain. It integrates Bundesdruckerei's security functions into the core of the database. People, machines, processes and objects can be integrated into administration and companies of all industries. Legal requirements, such as the European Data Protection Regulation (GDPR), are implemented technologically.

Bundesdruckerei has transformed itself from a traditional manufacturer of official documents such as passports and ID cards to one of the leading companies for security solutions, also in the digital sector. For the development of further, safety-relevant products, the innovation department now relies on the database platform of Cortex AG from Hanover and starts the development of an initial application with the FIDES project.

The CortexDB is used as the basis for the development - an industry-proven database management system (DBMS) that already offers various standard functions for storing and networking data sets. "Document store", graph functionality, bi-temporal data storage (i.e. period of validity of values and their transaction time), as well as the automatic 6th normal form (NF6) for all database contents (multidimensional key/value store) are supplemented with security functions and block chain functionality from the Bundesdruckerei. The core of the database receives integrated security functions so that the system can "intrinsically" protect any information.

Quantum mechanical extension of the blockchain with bidirectional connection between identities and data

The FIDES development project aims to develop an identity and rights management system in which the user alone has control over his data. Each authorization is stored in the form of a digital authorization blockchain and is inseparably linked to the identity of the data owner. Each blockchain represents a unique link between an authorization, the owner of the authorization, and a user identity. At any time it is possible to determine who accessed which data with which authorizations and when and where these authorizations come from.

A conventional blockchain links data blocks in only one direction: from predecessor to successor (unidirectional). The Bundesdruckerei authorization blockchain enables concatenation in both directions (bidirectional). Quantum mechanical functions exchange information between the blocks in both directions. This prevents the last attached data blocks from being manipulated. Each action is logged in a traceable and unchangeable manner.

Master of data

Each blockchain is maintained centrally in the CortexDB and stored separately from the encrypted user data (the "knowledge"). Access to the data requires authorization from the author in the form of such a blockchain. This means that unauthorized access is not possible. This also applies if different authentication features are used for the applications (e.g. password, biometric features, personal or medical ID cards). In addition, different identities can be used in different systems, as well as a single identity for many systems.

This enables independent rights management by individuals or processes. Even administrators have no direct access to the data they manage (zero knowledge principle). This significantly increases security against unauthorized data access and therefore offers possibilities for use in electronic patient records, for providers of central authentication services or for applications in the Internet of Things (IoT) and in industries as well.

Information about the database technology CortexDB and the free download of the (limited) standard version can be found on the website of the manufacturer Cortex AG (<http://www.cortex-ag.com>).

Further information on identity management can be found on Bundesdruckerei's website, Bundesdruckerei will once again be represented at this year's Hanover Industrial Fair (Hall 6, Stand E16).

For the editors

With the holistic CortexPlatform, Cortex AG offers a set of tools for any company application based on CortexDB technology. With little programming effort, applications in the areas of digitization, big data, industry 4.0/IoT, analytics, master data management, dispositive planning or process-based solutions can be created.

The core of the CortexPlatform is the CortexDB, which provides an automatically normalized index of all fields and contents and thus maps the 6th normal form (NF6). It thus offers high-performance, cognitive database queries on any attributes and data sets in any combinatorics and relationships in a temporal context.

Further Informations

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