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Database system for a social network using blockchain technology

The invention presented here concerns a database system with a blockchain component for running a social network, as well as the social network constructed upon this database and the technical process of generating a social network from the said database system.

The most prominent established social networks harvest user data and store user data in algorithmically analysable activity profiles or repositories associated with each user. Data is transferred to the ownership of the social network operator, and no longer belongs to the user. Users have little to no influence on the way their data is stored and all of their activities are stored and processed on the servers of the social network operators. Often social networks harvest data through direct access to users' computers, adding data external to the social network to users' activity profiles. In addition, established social networks are connected and exchange user data to expand their repositories with user data they do not have direct access to. Social networks have built their business models around harvesting, storing, and algorithmically processing user data. Social networks target users with commercial advertisements adjusted to their internet activity or sell data packages to third parties.

The business of social networks is based on the constantly expanding user activity profiles and repositories. Users themselves cannot remove or delete data or their entire activity profile from the servers of the operator, they stay there indefinitely.

The purpose of the invention presented here is to provide users with a database system, as well as a social network constructed on this database system, in which users have full control over their data and at any time can change or delete data uploaded to the social network, as well as control the visibility of their data to other users.

This task is performed through the technical processes and systems described in the present patent claims.

The invention is a relational database system for a social network, over which a number of users can share data under the following conditions:

The data associated with a particular user is stored as data blocks in the database;

The data blocks associated with a particular user can be managed only by this particular user;

The sharing of data between users in the social network is defined through pre-programmed data chains, which specify which types of data can be shared with which other users;

Every data chain is saved in the database and can be managed or changed only by the owners of the data blocks connected in the chain;

The data chains perform particular functions for the exchange of data and communication between users based on the types of data blocks connected by the chain.

The invention also involves the technical process for generating the social network over which users communicated and share or exchange data. This occurs under the following conditions:

The data associated with a particular user is stored as data blocks in the database;

The data blocks associated with a particular user can be managed only by this particular user;

The sharing of data between users in the social network is defined through pre-programmed data chains, which specify which types of data can be shared with which other users;

Every data chain is saved in the database and can be managed or changed only by the owners of the data blocks connected in the chain;

The data chains perform particular functions for the exchange of data and communication between users based on the types of data blocks connected by the chains.

The invention also includes the actual social network platform or system, based on the back-end database described above, over which users interact and share data.

Data chains can be stored as tables, and thus as relations, in the relational database.

The database system presented here – including the process for generating a social network and the said social network based on it, which connects data blocks filled with content from data owners through pre-defined data chains according to data owners' wishes – has two further possibilities for storing data when users choose to do so. One is the storing of data in an immutable, read-only mode, accessible only to the legitimate owners of the data, in a separate database as well as the encrypted transferral of data from this database to an external blockchain ledger.

The database system presented here connects the cells of the tables in the relational database and thereby their contents (the data blocks) with data chains. In the first instance, these data chains process and facilitate standardised presentation and communication application associated established social networks, such as the setting of geographical and language preferences, following an author of content, or saving an online shop or product on a favorites list. Secondly, the data chains facilitate those applications that require the permission of one or more users, such as the sending of a friend request.

Furthermore, the database at the core of the invention presented here, allows the creation of additional, special-purpose or customised data chains, layered on top of the standard data chains described above, according to the requirements of managers of large communities on the network. These customised data chains primarily designate or distribute particular certifications and attributes to their users and connect the said users accordingly.

The database uses a data structure allows the identification of specific data items in pre-defined relations to other data items. The database stores data in data blocks according to specific categorisations in tables with hundreds, thousands, or millions or rows. These tables also contain an indefinite number of columns which correspond to, represent, and identify specific data types or categories (which determine the nature of the data blocks).

The invention is described in more detail in the Figure 1 and Figure 2.

Figure 1 illustrates a social network with three sample users A, B, and C and with data from user A processed in the corresponding data chains.

Figure 2 illustrates an Internal Receipt Ledger communicating with an external blockchain based on the example of the social network in Figure 1.

Figure 3 illustrates the whole process based on the technical features of the invention presented here.

The structure of the database system presented as the invention here, consisting of tables, rows, and columns, shall now be described in more detail. The database may consist, for instance, of 10,000 tables each with an indefinite number of rows and columns.

The data blocks of the database can contain any type of data, such as texts, images, videos, and/or weblinks. Registered users in the network can at any time freely use these data blocks to enter, change, or delete their data and can also determine which other users may see their data by managing the data chains connecting their data blocks.

Data blocks provide users with space to store their data, and through the data chains every user can decide to which other users they make their entered data accessible or visible. Thereby connections between users are made which here generally will be referred to as “data chains”. Data chains represent relations betweens data types stored in tables in the relational database. The content (or data blocks) connected through the data chains are exclusively accessible to the rightful user or group of users and cannot be used by any other user with permission by the owner of the data. The data is shown on a pre-defined user interface on the computer, tablet, or smartphone of another user, yet they can only be seen but not changed.

In this way, users are provided with absolute ownership and control over their data as well as the ability to determine which other users have permission to view their data.

In some cases, the freedom to change or delete data in the database system at will or arbitrarily change the access permission to data items may have significant drawbacks or may not be desired by the users involved, such as when transactions on the network produce receipts and invoices, or certificates are distributed by an organisation, or agreements are made on the network. In such cases, the database system presented here provides the solution of storing the data blocks concerned separately and unchangeably in the database system in a read-only mode accessible only to the parties involved. Furthermore, the invention uses blockchain technology to store those fixed data blocks in the

database system on a separate external immutable blockchain-based ledger with access given only to the legitimate users.

The blockchain technology is also used for the network's proprietary cryptocurrency and can also be used for the management of other cryptocurrencies brought by users onto the network.

Transactions with cryptocurrencies, such as the payment of a commercial transaction, operate on separate blockchains but visualized in the same wallets to users.

Figure 1 shows an exemplary scenario in the social network in which User A enters their data with attributes a, b, c, d, e, f, g as owner into the social network. The data is distributed in several tables (1-7) in a relational database and connected via data chain no. 8. The thereby connected data blocks create a new table. The data blocks are managed by User A as the owners of the data. User A can change or delete the contents of the data blocks at any time and determine with which other users they wish to share all or parts of their data. In the scenario of Figure 1, User A shares their data a, b, c, d, and g with User B according to data chain no. 9. Another table is thus generated with data according to data chain 9. User A shares data items x, y, and z with User C according to data chain no. 10.

The tables generated by data chains no. 9 and no. 10, contain the data shared by Users B and C. The users' data and the data chains can be seen as "smart contracts" between the users over the usage of their data. With permission from the users, data chains can also be connected among each other.

Data chains nos. 8, 9, and 10 connect the data blocks of the individual tables, rows, and columns of the database through either so-called standard or user-specific chains. Standard chains are pre-programmed into the system and enable users to connect via standard social media functions and applications, such as following a content author, offering or buying products, services, jobs, or real estate, or filtering content by geography or language.

User-specific chains allow organisational users to define or customise data chains for their community. User-specific chains allow the connection of users in a large/complex community by one overarching user (User C) in ways defined by the latter. All users connected by such a custom/overarching data chain can be said to give their permission in a form of smart contract. Nonetheless, users still remain owners of their data in the sense that they retain the sole right to change or delete their data in the data chain.

The structure of the invented database system presented here allows users to freely decide what data they enter into the available data blocks, and the ability to control which other users are able to see their entered data with the management of the data chains originating with them.

Yet the structure also allows the capturing or recording of data blocks and data chains so as to generate an unchangeable or immutable record or receipt of a particular transaction or interaction on the network. For instance, invoices and receipts produced by commercial transactions on the network or the award of a certificate to a user by an organisational user within or outside the network must be fixed as attributes on the network and recorded in some immutable ledger for security/trust purposes. For this purpose, the system provides so-called “Internal Ledgers”. These Ledgers are protected store spaces that record the contents and features of data blocks or data chains deposited there in a read-only mode and create an unchangeable record of said data.

The system confirms that a certain transaction, agreement, or certificate was made or distributed by copying all data blocks and data chains connecting the set of users involved and stores this copy in a storage system separate from the relational database where the receipt is no longer alterable. The totality of data held in these storage spaces is here called “Internal Receipt Ledger”.

The Internal Receipt Ledger (shown in Figure 2) can seen in a read-only mode by the users with the appropriate permissions.

To make the recording of transactions, agreements, and certificates even more secure and independent from the servers of the social network, the database system presented here employs blockchain technology, which in this specific application we here refer to as “External Receipt Ledger”.

The blockchain technology used involves the installation of masternodes and nodes operated on servers owned either by the social network or other operators so as to ensure that the blockchain is always functioning, when for instance more than 50 percent of the servers.

The masternodes and nodes represent the blockchain external to the relational database and generate the public keys required for the External Receipt Ledger. Data can be transferred from the Internal Receipt Ledger to the External Receipt Ledger and thus becomes part of the public key of the blockchain.

The transfer occurs by transferring the data blocks stored on the Internal Receipt Ledger, and the data chains connecting them, are transferred to the local computer of the user. There they are encrypted hexadecimally with the public

key of the blockchain and connected with the private key of the user. This should ideally occur on the personal computer of the user, as the servers of the network should not be able to read the private key of the user. The result of this encryption can then be stored on the servers and published on the blockchain.

This method ensures that only the users that participated in a particular interaction are able to see data concerning this interaction stored on the blockchain, and also that the Internal Receipt Ledger system cannot see user private keys.

In case of a receipt for a commercial transaction, only the parties involved can see the recorded item; in case of a public certificate, all users can view the item; and in case of internal certificates distributed within groups, only members of a particular community can view the item.

Transfer of data to the External Receipt Ledger can occur in two ways: (1) by default for any previously defined relation registered in the Internal Receipt Ledger; (2) when one user involved in the interaction chooses to transfer their data blocks and data chains to the public key of the External Receipt Ledger and thus to the blockchain. These are usually users that participated in the interaction, or any other external organisation or user involved in the creation of the particular Ledger Agreement, which here are referred to as “authorised users”. Whenever an authorised user wishes to transfer data from the Internal to the External Receipt Ledger, they can trigger the transfer via a mouse click. Every other authorised user involved in the interaction can subsequently to the same. Since after the previous triggering by another user the interaction is already existent on the public-key-encrypted part of the External Receipt Ledger, the other authorised user merely receives permission to access the recorded item with their private key.

Subsequently all authorised users that chose to transfer their items from the Internal Receipt Ledger to the blockchain of the External Receipt Ledger are able to view the item (both on the IRL and ERL) on the social network in their downloaded blockchain wallets with use of their private keys. A special software, installed on their wallet, allows them to view data published on the blockchain in the same format as on their user account in the social network and from there print the items.

This system makes it possible to trace and prove information stored in the Internal Receipt Ledger, such as the schedule or time stamp of a particular certificate. Any expiration or change to the duration of the certificate is then saved both in the Internal Receipt Ledger and in the public key of the External Receipt Ledger.

The same blockchain technology is also used to generate cryptocurrencies on various blockchains, which also run over masternodes and nodes operating on the same or different servers.

The social network's own cryptocurrency for internal use runs over the same blockchain platform. The system allows users to use their downloaded blockchain wallets and associated private keys to view both their cryptocurrency balance and their items on the External Receipt Ledger.

All further cryptocurrencies generated on the same blockchain platform and connected with the social network presented here, give users a wallet and private key as well as access to the External Receipt Ledger functions of the network.

Figure 3 illustrates the process by which the social network presented here is generated and through which user can share data with each other. This occurs under the condition that:

> in step 100 the data associated with a particular user is stored as data blocks in the database and data blocks associated with a particular user can be managed only by this particular user;
>
> in step 200 the sharing of data between users in the social network is defined through pre-programmed data chains, which specify which types of data can be shared with which other users;
>
> in step 300 every data chain is saved in the database and can be managed or changed only by the owners of the data blocks connected in the chain;
>
> in step 400 the data chains perform particular functions for the exchange of data and communication between users based on the types of data blocks connected by the chain.

Technical Specifications and Server Architecture

The implementation of the social network presented here uses PHP as a programming language for the relational database and MySQL for the data management trough the data chains. The messaging system is also based on

PHP code. The search engine uses its own servers with data management functions based on Sphynx.

The social network presented here also uses a Cashing Server (based on a Radis operating system) for temporary storage of the data blocks and data chains made available to a user during one session of usage. This removes computing loads from the rest of the server system with respect to the data accessed by individual users when they use the social network.

The use of a cashing server system 16 solves this problem, as it temporarily saves all the individual data blocks and data chains accessed by an individual user for quick reopening
And only accesses the entire database system again when an entirely new data chain is requested. The Cashing Server System 16 in Figure 3 is placed between User B and the database system.

The data temporarily stored in the intermediary Cashing Server are deleted completely from the Cashing Server after the end of a session. This enables a more efficient use of the database.

A Cashing system is especially beneficial to a relational database because it primarily works with data chains whereby every request for data turns the data blocks associated with it into a url sendable to the device of the user. Without this mechanism a relational database would quickly be overloaded as relational databases cannot easily handle many simultaneous requests for different chains connecting different data types.

In this way, the social network, along with the blockchain for the social network with a relational database managing user data and the connections between users, can be realized.

This mechanism ensures that a user accessed the entire database only for short periods of time and only for new data requests.

Furthermore, the mechanism allows for better regulation of data traffic between users and makes the entire database system more scalable.

Lastly, a Cashing Server system also prevents a crash of the database system due to overload. Too much traffic can merely lead to longer loading times. The data blocks and data chains concerned are deleted once and for all from the caching server after the end of a session or a certain period of inactivity by the user.

The caching technology also makes sure that any changes to data through the owner of the data are only visible to the user accessing the data with opening of a new session.

A similar system of special dedicated servers except without the deletion of data after the end of session can be used to immutably store data on the Internal Receipt or Agreement Ledgers and make them transferrable to the blockchain of the External Receipt Ledger subsequent to their hexadecimal encryption with the public key of the blockchain and association with the private key of the blockchain wallets of individual users. The transfer occurs upon request from the individual users. Activities and data is then stored immutably on a blockchain external to the core server infrastructure of the relational database. These external servers may contain the masternodes of the blockchain network and will act as peers or nodes in the blockchain of the External Receipt Ledger. In any way, the data of the Internal Receipt/Agreement Ledgers are stored permanently on the servers of the social network invented and presented here. They can be, but do not necessarily have to be, encrypted and transferred to the External Receipt Ledger and thereby onto a blockchain.

For this external blockchain, the invented social network uses the SkyFiber technology and the consensus algorithm called Obelisk. This technology allows the parallel operation of an infinite number of blockchain or digital currency networks, all accessible through the private keys of the dedicated blockchain wallets held by individual users.

Users on the invented social networking platform find themselves on an interface that looks and functions like a regular social network. However, as described above, the technology behind the functions operates differently to the standard social network.

The invented social network merely provides users with space in its database to enter and store their personal information. Users have full control over these storage spaces and may at any time change or delete data contained in them.

Furthermore, users may use the data chains to determine which other users may see or access the data they entered into the data blocks. Some data chains may also require a request-permission interaction between two users, such as a friendship request.

Every data block connected via a data chain thus receives an internet identity which determined which content and in which form is made available to which users.

A click on a particular function or items triggers the assemblage of data blocks according to the relevant data chains associated with the requested items and according to the requesting user's permissions, in order to construct and present the requested content – whether pictures, text, or videos – on the computer of the clicking user. This implies a peer-to-peer exchange of data between users for the generation of requested items on user computers.

Every image remains the same, defined through the URLs from the tables connected via data chains, unless the original author makes a change.

Only when the interaction between users generates a receipt or certificate which the parties wish to be immutable are the concerned data chains recorded and stored separately on the Internal Receipt Ledger, where their copy can no longer be changed. From there the data can be pushed to the blockchain of the External Receipt Ledger, of triggered by the parties involved.

Practical case study

The database of the social network presented here has a geographical structure based on countries, regions, and cities and is currently active in 224 countries with over 52000 cities.

This system allows users to freely enter their data into the data blocks of the database, as well as manage, change, or delete them, and connect them via data chains and control their accessibility to other users. Every user manages their data themselves and is in full ownership of their data, the relational database merely offers the structured storage space for the data and orders it to perform functions.

Technically, every action, such as a click in the network, generates a URL and thus an internet identity that implies a command to the system. The command merely tells the system to extract all data packages for which a user has permission and assemble them on to the user's computer to create the item or function requested by the user.

Every click on this URL, for instance when this URL is shared online, leads to the connection of data blocks in data chains in pre-defined ways and thus to the same result on the device of the user, with the given restrictions of access imposed by the owners of the data in the data blocks.

Privacy settings for the data blocks and the data chains are set only by the owner of the data in the data blocks. All data management functions are available only to owners of data. Owners of data may at any point change or delete any piece of data, along with their profiles entirely, upon which their associated data blocks and data chains are removed from the data base once and for all.

In technical terms, this is what differentiates GLBrain from all existing social networks and online marketplaces. The social network invented and presented here, due to the structure of its database, does not have the ability to harvest, monetize, or otherwise use user data for commercial purposes and does not algorithmically process user data to push or advertise particular contents to users such as targeted ads.

Rather, the social network presented here merely provides users with categorised data blocks and tables in which they can freely deposit pieces of information over which they retain full control. These contents packages are merely connected with other users and contents packages through data chains based on the settings of the owners of the data.

Every click by a user requesting to see particular items or pieces of information causes content packages consisting of data blocks to be sent along data chains based on their identity and assembled into the requested item on the device of the clicking user. Users can only view the requested items, but not store them on their devices.

The basic content packages delivered consist only of the data entered by its owners and made available to other users.

The social network presented here covers all essential online functions required for social networking and e-commerce, including presentation, content sharing, community management, messaging and communication, posting and chat groups, as well as an online market place for products, services, jobs, and real estate. Everything is co-located on a geographically structured platform that allows users to set geographical filters and auto-translate content between 106 languages. When a user selects the translation function the system sends all the relevant data blocks consisting of text information through a translation tool before assembling them on the user's device and presenting them in the selected language.

This technical concept is the only possibility for total data control by users over all of their entered data in a free-to-access social networking platform. It offers users all essential social networking and e-commerce functions at the same time

as providing full data ownership to users and full control over which other users are able to view their data.

The Internal Receipt / Agreement Ledger system is the only way to create objective, traceable, unchangeable, and secure records of activities in what is fundamentally an open data system in which all data is changeable at any point.

The technical concept of the Internal Receipt / Agreement Ledgers in which information of the involved users is copied and stored in the form of data blocks connected by data chains, allows the necessary hexadecimal encryption of data and its subsequent reading into a blockchain.

In this way any type of agreements, confirmations, and receipts can be published and managed on a blockchain-based ledger external to the social network. In combination with a digital currency system, one blockchain wallet can show and manage both stored receipts for transactions as well as payments made.

Further benefits of the invented system:

This system of sharing information allow further applications not available on most other social networks:

- automatic posts in other social networks. In this case relevant data is automatically transferred into the appropriate format to be posted in another social network.
- automatic presentation of all text in one of 106 languages. The translation function can be activated with a link on the invented social network that allows the user to set a particular language and automatically sends data blocks and their associated data chains through a translation tool before presenting it to the user.
- a multi-level marketing system for the promotion of the professional services offered by the invented social network. Every user that brings their community onto the social network is permanently given a share in all revenues derived from the activities of their community.
- the distribution of any type of certification to users as well as their relevant categorisation and selection
- the creation of custom chains with purpose-built community management functions
- any type of user-oriented multi-level marketing or sales system facilitated by custom chains

- payment management for payments made in the social network's in-house cryptocurrency or in third-party cryptocurrencies
- rewarding of sales agents in cryptocurrency
- sharing of the revenues of the network, such as for advertising, with the creators of content generating the traffic on the ads (Blogger Reward System)
- the management of data based on a geographical structure connected with the goods and services offered by certified local sellers and the implementation of relevant smart contracts between these sellers and other defined sales partners signed up in the social network.

In this way all relevant users that sign up by referral from a different user can be connected in purpose-built data chains going beyond or allowing more complex forms of community management than the basic standard chains.

The blockchain technology deployed in the invented social network and described above allowed for the following applications:

Blockchain and Cryptocurrencies

The invented social network presented here operates its own purpose-built cryptocurrency which shall be referred to as In-Use Coin here. It is used for payment of the professional services offered by the social network itself.

The same technology also allows for users to create their own proprietary cryptocurrencies for operation on the social network. An example of this would be issuing of digital vouchers used by NGOs or the creation of a parallel currency system allowing for targeted sustainable quantitative easing to create liquidity for development-related business projects. Digital vouchers used by NGOs can minimise losses in charity funds to corruption and the shadow economy by earmarking digital proies for individual units of the concessionary funds that can be redeemed by certified suppliers of development goods in exchange for the actual fiat development funds.

Smart Agreements and Smart Contracts

The blockchain technology of the invented social network presented here allows the transferral of receipts, agreements, and certificates stored on the Internal Receipt Ledger to the blockchain-based External Receipt Ledger. All records are visible yet unchangeable to the relevant users through their blockchain

wallets, from which users may also manage smart contracts / agreements they have with other users.

Wallet with comprehensive management functions

Every user is provided with a free-to-download blockchain wallet that allows them to make transactions and payments with other users in all certified cryptocurrencies on the network.

With the private key associated with their wallets, users can access various contents stored on the public keys of various blockchains associated with the social network and can thus view or manage all relevant data on the External Receipt Ledger or make transactions in cryptocurrencies on all blockchains operated through the social network.

Further Applications

The database system and social network presented here allow for a tremendous range of applications, given it enables the full data ownership and control by the user as well as the creation of immutable records of activities or transactions on the network through the Internal Receipt Ledger application. The data stored there can be pushed to an external server system operating an immutable blockchain-based ledger for additional security if chosen by the users, who will have access only to the receipts they participated in producing.

The integration of a digital currency system into the platform's comprehensive community management functions opens up a myriad of further potential applications.

The possibility of creation customised chains for organisational users for complex community management projects further broadens the range of potential applications.

Practical Example of Application in Digital Currency System for Development

The UN has been discussing the use of blockchain technology to help reach its 17 Sustainable Development Goals (SDGs). Concepts have been proposed which envision the issuance of a "UN-Token" which represents a parallel digital currency used for targeted sustainable quantitative easing (QE).

Furthermore, NGOs are increasingly looking to digital currency solutions to create voucher system by which to distribute charity and concessionary funds. In order to run such a voucher system, NGOs require not only their own proprietary digital currencies running on their proprietary blockchains. They also require the interface and technology of the invention described here, as well as the Internal and External Receipt Ledger technologies.

A solution provided by the invented social network presented here can take the following shape:

- The generation of the UN-Token on the blockchain platform used by the invented social network as a real parallel digital currency.
- The generation of further digital currency systems for individual NGOs, in which digital vouchers represent units of development funds held by the NGOs. While the NGO are redeemable for hard fiat currency, the SDG token is not securitised in the same way and thus represents a proper hierarchical currency only in digital form.
- The possible recipients of either the NGO vouchers or the SDG token are identified through local agencies or NGOs and register with the invented social network, where they are certified as legitimate recipients of said development goods.
- In order to ensure that the digital vouchers/tokens are spent appropriately at selected suppliers of goods, trusted suppliers of products and services also register with the invented social network and thus receive a certification.
- Now the vouchers/tokens can be spent for all products and services offered by suppliers that meet the standards/requirements of the relevant NGO or UN programme.
- The quality/standard of these goods and services is guaranteed through the certification of their suppliers. If suppliers fail to meet standards, this can be reported and certifications removed.
- The system of the invented social network provides a unique user interface for this purpose with all necessary functions.
- Especially the geo-selection function is important here, as all users can easily see which suppliers in their proximity provide the relevant goods.

- The automatic translation function between 106 languages is also essential in this context. The invented social network is unique in its offering of this auto-translation function.
- The digital vouchers distributed directly to legitimate recipients are spent at the certified suppliers according to the rules framework of the NGO and can subsequently be redeemed by suppliers for hard fiat funds and are subsequently burned. When the tokens are designed as a parallel currency, as in the case of the UN-Token, they remain in circulation. Coins are issued when a recipient is identified and certified, and the coins are earmarked for use only at certified suppliers of development-related goods covering basic needs.
- Coins can also be held by suppliers, and in the case of the UN-Token must be spent on loan or tax payments, which can help countries tackle their high rates of inflation.
- The state in question is also not dependent on a complex tax system to deduct the tax duties incurred by transaction in these tokens. When used for tax payment, the state may simply exchange the token for parts of the minimal reserve of dedicated funds held by the UN to partially back the currency.

This is a simple example that shows how uniquely powerful the system of the invented social network is in combination with the Internal Receipt Ledger technology and its associated blockchain-based Smart Contract / Smart Agreement system.

Claims

1. A relational database system for a social network, over which a number of users may share data and in which

   The data associated with a particular user is stored as data blocks in the database;

   The data blocks associated with a particular user can be managed only by this particular user;

   The sharing of data between users in the social network is defined through pre-programmed data chains, which specify which types of data can be shared with which other users;

   Every data chain is saved in the database and can be managed or changed only by the owners of the data blocks connected in the chain;

The data chains perform particular functions for the exchange of data and communication between users based on the types of data blocks connected by the chains.

2. A database system according to Claim 1 which contains a payment mechanism, especially a blockchain-based payment mechanism, by which transactions of cryptocurrencies between at least two users can be made.

3. A database system according to the previous two Claims in which data contained in user-owned data blocks and connected via data chains, is published on a blockchain.

4. A database system according to the previous Claims which contains a function enabling fiat currency transactions between at least two users.

5. A database system according to the previous claims in which the data chain is built internal to the network.

6. A database system according to the previous claims in which a data chain internal to the network is reproduced in all its data blocks in a blockchain external to the network.

7. A database system according to one of the previous claims in which one the functions is to enable a smart contract or smart agreement between two users.

8. A database system according to the previous claims in which predefined data blocks and/or predefined data chains are recordable in an immutable way.

9. A database system according to the previous claim in which the data blocks and/or data chains are recorded immutably in such a way, that the blocks and/or chains are copied and stored in a location (11) on the network where they are no longer changeable through the users.

10. A database system according to the previous claim in which the data blocks and/or data chains stored in an appropriate location (11) where they can be encrypted in such a way that only authorised users have access to the stored items.

11. A blockchain on which, according to the previous claim, data blocks and/or data chains stored in the relevant location (11) can be encrypted and transferred to a blockchain, in such a way that only authorised users can have access to the items stored on the blockchain with use of their private key.

12. A database system according to one of the previous claims, in which data blocks and/or data chains which a user desires to be immutable, are able to be stored at a dedicated location and are accessible only to authorised users.

13. A database system according to the previous claim in which the immutable data blocks and/or data chains can be transferred to a blockchain in an encrypted way.

14. A database system according to one of the previous claims which also has the following characteristics:

    a Caching System (16) that is dedicated to each user on the network and which temporarily stores the data chains requested by a user for the length of the session in order to not access the entire relational database again for data chains which the user has already requested once.

15. A database system according to one of the previous claims, which also has the following characteristics:

    an internal ledger system that is designed to immutably store data blocks, connected via data chains, in the network.

16. A database system according to one of the previous claims, which also has the following characteristics:

    an external ledger system that is designed to immutably store relations or data chains as described in Claim 14 on a blockchain external to the database system.

17. A database system according to Claims 15 and 16, in which

    the database system is designed to transfer data blocks and the associated data chains stored on the Internal Receipt Ledger onto the computer of a user where they can be encrypted with a key from the blockchain and associated with the private blockchain key of the user.

18. A process for the generation of a social network, over which a number of users may share data and in which:

    The data associated with a particular user is stored as data blocks in the database;

    The data blocks associated with a particular user can be managed only by this particular user;

The sharing of data between users in the social network is defined through pre-programmed data chains, which specify which types of data can be shared with which other users;

Every data chain is saved in the database and can be managed or changed only by the owners of the data blocks connected in the chain;

The data chains perform particular functions for the exchange of data and communication between users based on the types of data blocks connected by the chains.

19. A process according to Claim 18 in which contains a payment mechanism, especially a blockchain-based payment mechanism, by which transactions of cryptocurrencies between at least two users can be made.

20. A process according to Claims 18 or 19 in which data contained in user-owned data blocks, and connected via data chains which perform a payment mechanism, is published on a blockchain.

21. A process according to Claims 18 to 20 in which one function is a payment system which enables fiat currency transactions between at least two users.

22. A process according to Claims 18 to 21 in which data chains are generated within or internally in the network.

23. A process according to Claims 18 to 22 in which data chains generated within the network along with the relevant data blocks can be reconstructed externally on a blockchain.

24. A process according to Claims 18 to 23 in which one function is the facilitation of a smart contract or smart agreement between two users.

25. A process according to Claims 18 to 24 in which pre-defined data blocks and/or pre-defined data chains are recorded in such a way that they are immutable.

26. A process according to the previous claim in which the data blocks and/or data chains are recorded immutably in such a way, that the blocks and/or chains are copied and stored in a location on the network where they are no longer changeable through the users.

27. A process according to the previous claim in which the data blocks and/or data chains stored in an appropriate location where they can be encrypted in such a way that only authorised users have access to the stored items.

28. A process according to the previous claim in which, according to the previous claim, data blocks and/or data chains stored in the relevant location can be encrypted and transferred to a blockchain, in such a way that only authorised users can have access to the items stored on the blockchain with use of their private key.

29. A process according to Claims 18 to 28, in which data blocks and/or data chains which a user desires to be immutable, are able to be stored at a dedicated location and are accessible only to authorised users.

30. A process according to the previous claim in which the immutable data blocks and/or data chains can be transferred to a blockchain in an encrypted way.

31. A process according to Claims 18 to 30 in which a caching system that is dedicated to each user on the network and which temporarily stores the data chains requested by a user for the length of the session in order to not access the entire relational database again for data chains which the user has already requested once.

32. A process according to Claims 18 to 31 in which an internal ledger system that is designed to immutably store data blocks, connected via data chains, in the network.

33. A process according to Claims 18 to 32 in which an external ledger system that is designed to immutably store relations or data chains on a blockchain external to the database system.

34. A process according to Claims 32 to 33, in which the database system is designed to transfer data blocks and the associated data chains stored on the Internal Receipt Ledger onto the computer of a user where they can be encrypted with a key from the blockchain and associated with the private blockchain key of the user.

35. A social networking system that contains a database system according to or as described in Claims 1 to 17.

Summary

A relational database system for a social network through which a number of users may share data with each other in which personal information associated with a user is stored in data blocks, in which the data blocks associated with a particular user may only be managed or accessed by this user, in which the sharing of data between users is determined by pre-defined data chains, in which the pre-defined data chains specify what data is shared and with which other users it is shared, in which every relation is stored as a data block and can only be managed by the user owning or associated with the data in the data blocks, in which the pre-defined data chains facilitate the execution of applications and functions based on the shared data.

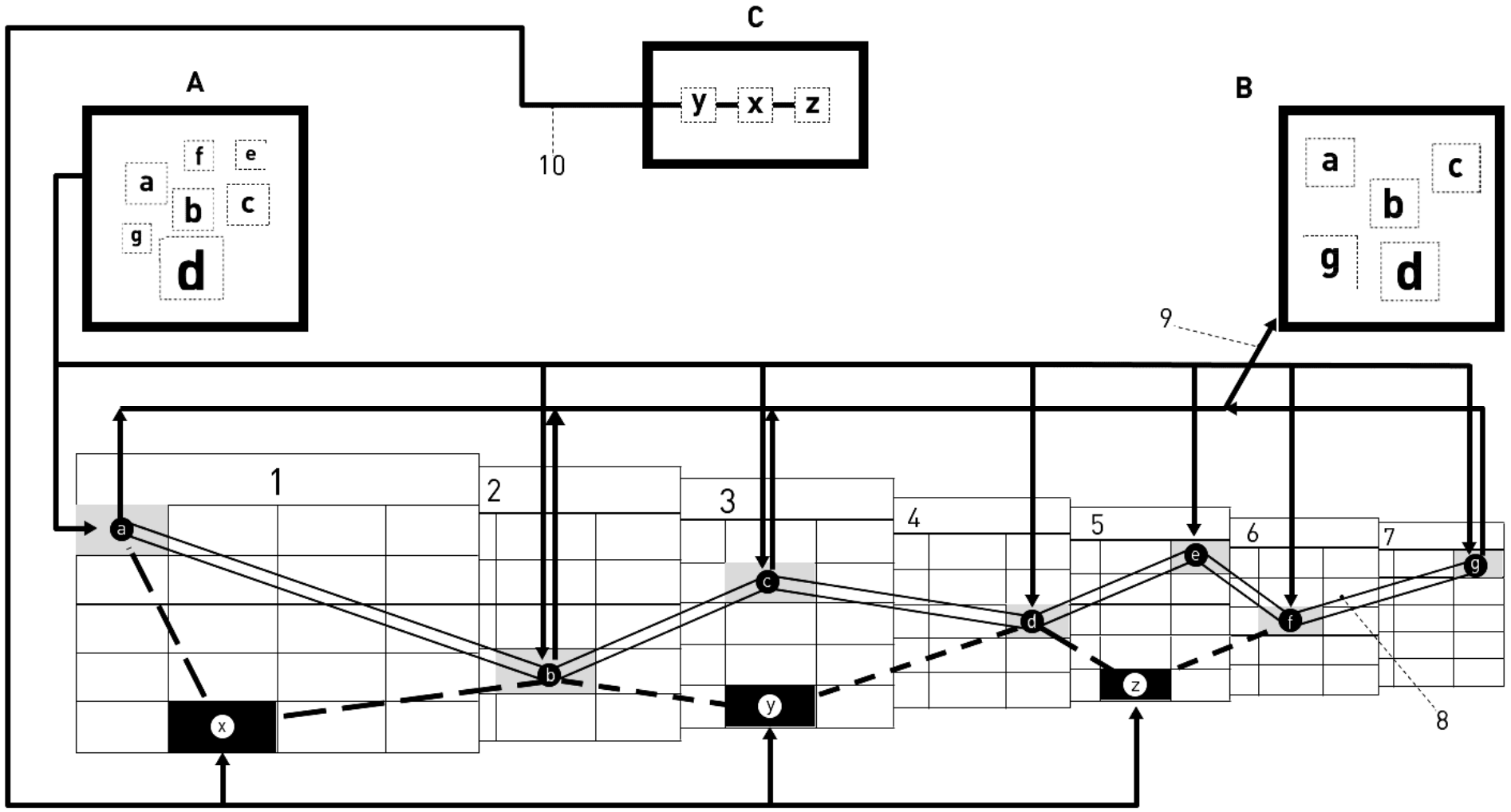

Fig. 1

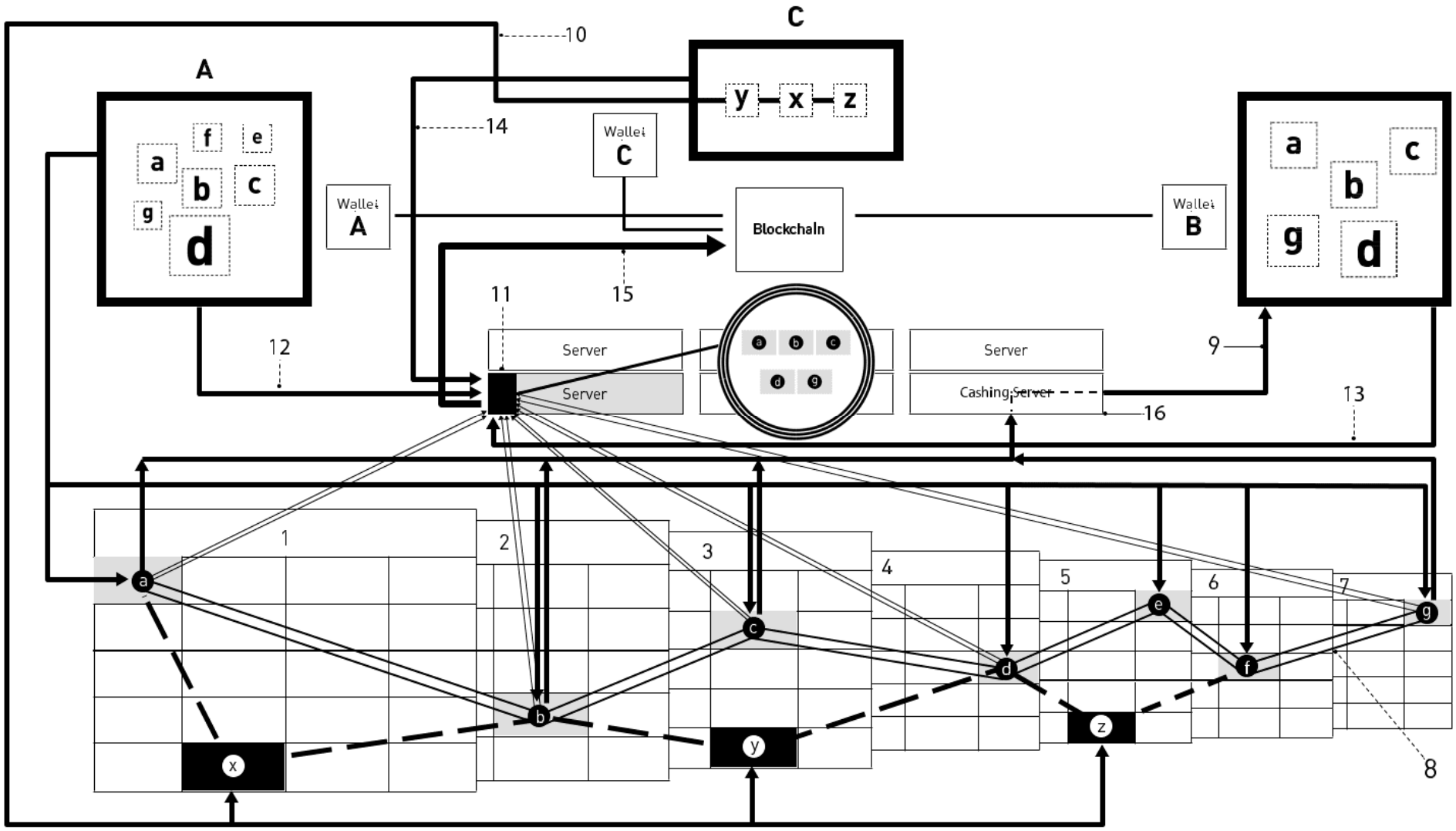
A
B
C
10
14
15
11
12
9
13
16
Wallet A
Wallet C
Wallet B
Blockchain
Server
Server
Server
Cashing Server
a
b
c
d
e
f
g
x
y
z
1
2
3
4
5
6
7
8

Fig. 2

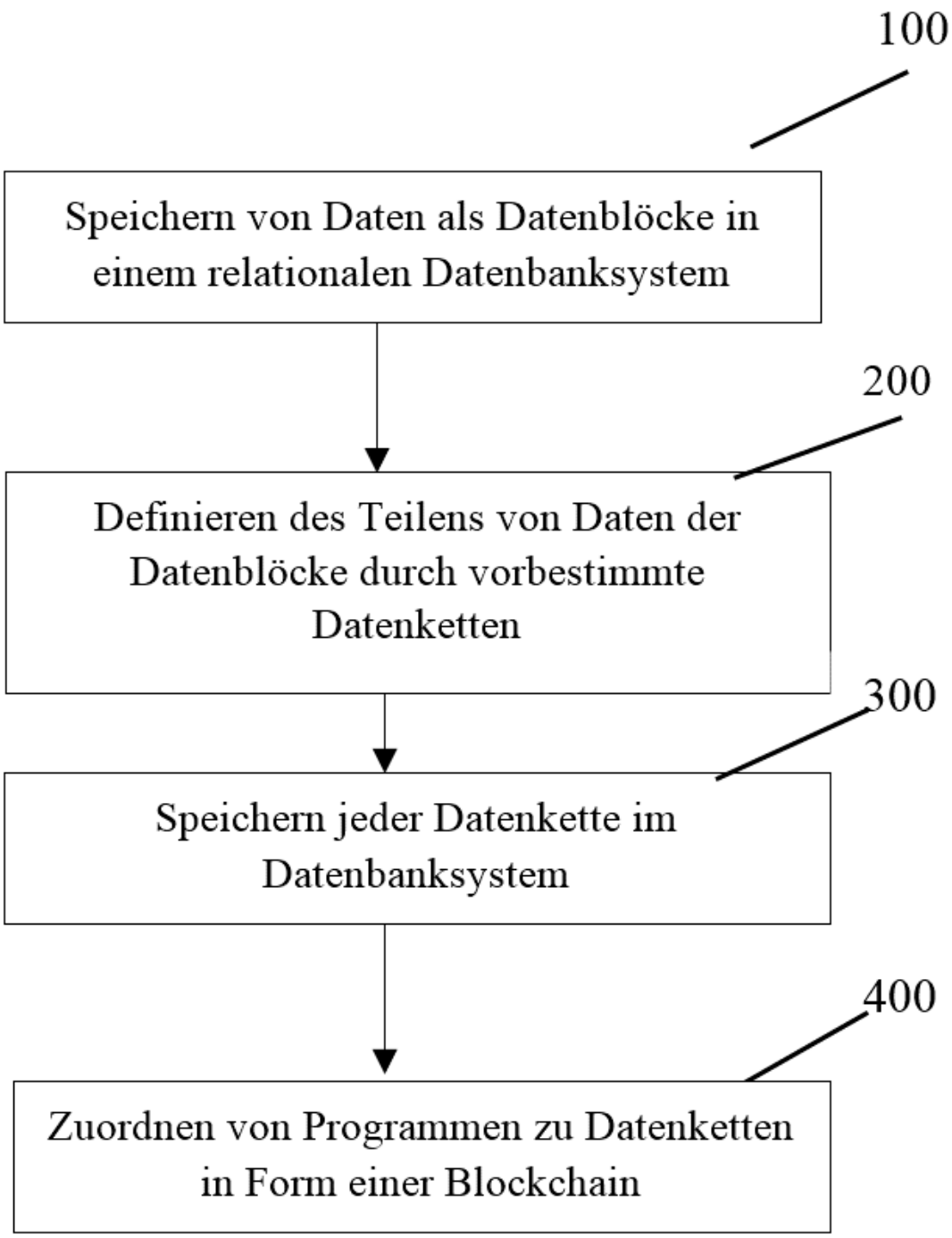
100
Speichern von Daten als Datenblöcke in einem relationalen Datenbanksystem
200
Definieren des Teilens von Daten der Datenblöcke durch vorbestimmte Datenketten
300
Speichern jeder Datenkette im Datenbanksystem
400
Zuordnen von Programmen zu Datenketten in Form einer Blockchain

Fig. 3