ELECTRONIC CHECK-BASED PAYMENT SYSTEM AND METHODS FOR ISSUING, TRANSFERRING, PAYING AND VERIFYING ELECTRONIC CHECKS

Field of the Invention

The invention relates to the sphere of information technologies, in particular, to electronic systems and monetary fund circulation methods and can be used for solving problems of mutual settlements between participants of the electronic payment system in real-time mode. In doing so, the analogue of monetary funds in the invention in question are electronic bank bearer checks complying with bank regulations and the requirements of applicable legislation.

Background of the Invention

Electronic payment systems that use electronic checks for solving mutual settlement problems are well-known. In particular, the CyberCheck system, which uses electronic checks as a means of payment for goods and services has become commonplace. In this system, a check is only used for the execution of payment operations and is only generated after its signing by the users, which does not ensure the full scope of monetary fund circulation, considerably narrows settlement system capabilities and creates prerequisites for issuing uncovered checks.

Also familiar is the NetChex system, which is a conditionally electronic payment system. In this system, the customer's order to issue a check is only received in electronic form, and the check is to be sent to the supplier of services/goods in paper form, which also narrows settlement system capabilities and significantly complicates the check circulation process.

The use of Paymer digital checks for settlement purposes is also well-known. In the implementation of this system, information about checks upon their circulation is stored in documented form in hard copy, and the execution of transactions by means of checks between system users is possible both in electronic form and in hard copy. At that, checks are not referenced to a particular owner, whereby the problem of "joint possession" of a check arises. It is evident that this system does not permit excluding risks in implementing electronic mutual settlements and does not ensure the transparency of all electronic check processing operations.

Summary of the Invention

Embodiments of the invention seek to provide an electronic monetary system supporting electronic mutual settlements between its participants in real-time mode with the use of electronic analogues of bank checks, providing its participants with a high level of security and the possibility of obtaining a full, legally-valid documentary database on all transactions executed by the participants in the system.

The technical result seek to be achieved by embodiments of the invention involves the creation of a multifunctional electronic check circulation system as well as the security enhancement of mutual settlements with the use of electronic checks ensured by both engineering means and methods of electronic check record-keeping, verification of the authenticity of electronic checks and the authentication of system participants, and by ensuring a full cycle of electronic check circulation including methods of the issue and payment of electronic checks and the execution of electronic check transfers.

According to a first aspect, there is provided an electronic system of settlement by means of electronic checks containing at least one server computer device for data processing and storage, a server application and client computer devices for data processing comprising it, including the firmware client modules ensuring interaction of the client computer devices with the server device, with provision of the possibility of connection between the client computer devices and the server computer device over communication channels of the Internet network and the possibility of protection of the communication channels by means of the hardware and software facilities of the server and client modules with the use of encryption and electronic digital signature, wherein the client and server applications contain at least an interconnected unit for user authorization in the system, a unit for the updating and synchronization of client and server application data as well as a unit for the input of parameters of the execution of transfers and storage of information on payments of the client application, which is connected by hardware and software facilities with the units for verification of the parameters of electronic check transfers connected with the unit for the authorization and certification of user parameters and a unit for the registration and execution of electronic check transfers of the server application, which are connected by feedback channels with the units for electronic check management, for placing the commission check in an account and sending notices to the

user in real-time mode, connected to the unit for the updating and synchronization of client and server application data as well as inclusion of the electronic signature unit in the composition of the client application, which is connected by hardware and software facilities with the unit for the generation and storage of digital documentation of the server application, connected to the unit for the registration and execution of electronic check transfers; in doing so, the electronic check management unit of the server application is rendered as connected, by means of hardware and software facilities over feedback channels, with the interconnected units for the registration of transactions with electronic checks in the register and issue of electronic checks, as connected to the unit for electronic check signature.

According to a second aspect, there is provided a method for implementing electronic check transfers in the electronic check settlement system containing a server computer device for data processing and storage, an information display device and the server application comprising it, and a client computer processing device containing a device for information display and client applications connected over channels of wireless and/or Internet communication, comprising the sequentially implemented stages of the participant authorization in the system; the accounts data reception; input of electronic check transfer parameters; verification of electronic check parameters; registration of a request for execution of the electronic check transfer; execution of the transaction of the sender's check exchange into several checks including the transfer check, commission check, balance check; submission of checks for payment, payment and issue of new checks; placing the electronic commission check in the system operator's account and/or in the Dealer's (Broker's) account upon the transfer of electronic checks of the standard user category as well as in the bank account via a dealer (broker); placing the electronic check in the participant's account; finalization of the transfer accompanied by the creation and signature of electronic documents, notifying participants of execution of the transfer.

According to a third aspect, there is provided a method for issuing electronic checks in the electronic check settlement system containing a server computer device for data processing and storage, an information display device and the server application device comprising it, and client computer processing devices containing an information display device and client applications connected over wireless and/or Internet communication channels, comprising at least the obligatory stages of a request by the issuer for issuing a

check, the bank's verification of the receipt of monetary funds in the issuer's account, which serve as security for the given check, for conformity with the request parameters and the bank's confirmation of the electronic check issue, with provision of the possibility of the generation of legally-valid documents and the reflection of transactions in the check register to be generated and stored on the system server.

According to a fourth aspect, there is provided a method of payment of electronic checks in the electronic check settlement system containing a server computer device for data processing and storage, an information display device and the server application device comprising it, client computer processing devices containing an information display device and client applications connected over wireless and/or Internet communication channels, comprising the launch of the client application, in the course of which the K2 client unit for authorization in the system will be initialized, after whose execution the K3 unit will be launched for the updating and synchronization of client and server application data, in case of whose successful execution the initialization of the of the K8 unit for data input, the sending of an application for electronic check payment and input of the required initial data for generation of the application for payment of the electronic check will be performed; in doing so, the K8 unit will determine the bank acting as the payer for the Participant's electronic check on the basis of the input data, generate an application for payment of the electronic check in the form of an electronic document certified with the user's EHS and transfer the application to the S6 server unit for the registration of applications, requests, invoices for placing checks in an account, as carried out through the S2 unit, and perform the verification of data by comparing them with the data to be stored in the system DB, and in case of the positive result of verification, the application will be registered on the server, and the records will be introduced into the DB; at that, a message will be sent to the Recipient (paying bank) through the S10 unit for sending online notices on the availability of a new application; the Bank, by means of interaction with the S3 unit, will download the application from the server for payment of the electronic check; in doing so, the S3 server unit for data update, synchronization of client and server application DBs will perform verification of the fact that the request download has been carried out by the recipient with the "Bank" status specified in the request; after successful reception of the request, the triggering of the K14 unit of the Bank's client application will be performed for processing the applications received for payment of electronic checks, which will generate and output the data in the user interface on

the application for payment of the electronic check and provide the Bank with the option of declining or confirming the application; the Bank will verify the correctness of Application parameters, availability of the necessary amount of funds in the issuer's settlement account, and in case of successful verification, it will perform the generation, via the System, of the invoice for placing checks in an account by means of execution of the K6 unit of the client application for data input, sending invoices for placing checks in an account, which will generate the invoice for placing checks in an account in the form of an electronic document certified with the user's EHS and transfer the invoice to the S6 server unit for the registration of applications, requests, invoices for placing checks in an account; the S6 unit will execute the procedure for verification of the parameters of the invoice for placing checks in an account by means of the S2 server unit, perform registration of the invoice on the server in the system DB in case of the successful performance of verifications, and generate a message to the Recipient by means of the S10 unit for sending online notices about the availability of a new request; in cases where a system message is received, the K14 unit of the Bank's client application for the processing of applications received for the payment of electronic checks will perform updating of the state of application; the participant, having received the aforementioned invoice for placing checks in an account, will carry out transfer to the bank to the account in the System specified; in doing so, in cases where the transfer is received by means of the K9 unit for the processing of received electronic check transfers, the verification of payment details and other transfer parameters will be carried out, comparison with the parameters of the application confirmed for payment of the check to be stored in the DB and the procedure for verification of the received electronic check will be initiated; following receipt of the Notice of check verification from the Issuer and change in the state of Request for verification in the system to "confirmed," the bank will perform payment according to the check by remitting the respective monetary funds to the Participant's settlement account and carry out write-off of the check.

According to a fifth aspect, there is provided a method for verification of electronic checks in the electronic check settlement system containing a server computer device for data processing and storage, an information display device and the server application device comprising it, and client computer processing devices containing an information display device and client applications connected over wireless and/or Internet communication channels, distinct in that it will be launched in cases where the Bank has received the

transfer of the electronic check to the specialized account with indication of the data, in the purpose of payment, on the application for payment of the check; in doing so, the Request for verification of the electronic check submitted for payment will be generated; at that, the execution of the K15 unit will be initiated for data input, sending requests for the verification of electronic checks; the K15 unit will provide the bank with the possibility of automatic completion of the request parameters on the basis of the received transfer; in doing so, the K15 unit will certify the request in the form of an electronic document with the bank's EHS and send it to the S6 server unit for the registration of applications, requests, invoices for placing checks in an account, which will execute the procedure for verification of the parameters of the request for verification of the electronic check, and in case of successful fulfilment of all verifications, it will determine the Issuer's registration number and save the request to the server in the system DB; at that, a message will be sent to the recipient (Issuer) by means of the S10 unit for sending online notices on the availability of a new request; the Issuer, by means of interaction with the S3 unit, will download the request for verification of the electronic check from the server; in doing so, the S3 server unit for data involving the updating, synchronization of client and server application DBs will perform verification of the fact that the request download is being performed by the recipient with the "Issuer" status indicated in the request, and after successful reception of the request, the triggering of the K12 unit of the Issuer's client application will be carried out for the processing of requests received for the verification of electronic checks, which will output the data in the user interface on the request for the verification of an electronic check and provide the Issuer with the option to decline or confirm the request; in cases where all verifications have been performed successfully, the Issuer shall confirm the Request for verification of the check; at that, the K12 unit for the processing of applications received for the payment of electronic checks will send the request to the S13 server unit for the processing and execution of applications, requests and trigger the procedure for confirmation of the request for verification of the check of the S13 unit, in the course of whose execution, the data on the request being confirmed will be retrieved from the DB, the necessary verifications will be carried out and the triggering of the S9 unit will be performed for the generation of digital documentation, with provision of the possibility of generation of the Notice of the verification of an electronic check; at that, the document, by means of execution of the K17 unit for the electronic signature of digital documentation, will be

signed with the Issuer's EHS. The S13 unit will notify the Bank about the change in the state of the application sent by the Issuer.

According to an embodiment, an electronic check settlement system is used containing at least one server computer device for data-handling and storage, including a server application, and at least one client computer device for data-handling, including firmware client modules ensuring the possibility of connection of the client computer device to the server device over Internet network communication channels and the protection of communication channels by firmware means of server and client modules with the use of encryption and electronic digital signature. In doing so, the electronic settlement system for electronic checks in question differs from the prototype in that the client and server applications contain at least interconnected units of user authorization in the system being interconnected, a unit for the updating and synchronization of client and server application data, as well as a parameter-input unit for the execution of transfers and storage of information about client-application payments related by firmware with units for verification of the parameters of electronic check transfers connected to the unit of authorization and verification of user parameters and a unit for the registration and execution of server-application electronic check transfers connected by feedback channels to units for electronic check management, check depositing, commissions, and the sending of notices to the user in real-time mode connected to a unit for the updating and synchronization of client-application data, as well

as the inclusion of an electronic-signature unit in the composition of the client application, which is connected by firmware to the unit for the generation and storage of digital documentation of the server application connected to the unit for the registration and execution of electronic check transfers; at that, the electronic check management unit of the server application is connected by firmware over the feedback channels to interconnected units for the registration of electronic check transactions connected to the electronic check signature unit.

In doing so, the client application units are grouped into modules by categories corresponding to the user status determined by the authorization unit of the client and server applications, with provision of the possibility for pre-setting a group of check circulation parameters for each category.

In particular, the system provides three categories of users – the initial category with a minimum set of check circulation parameters (in operating mode, when the transfer of electronic checks in the standard user category as well as those of the bank are performed via a dealer (broker) – the initial category is used exclusively for registration and the sending of an application for changing status (user category)); the standard category – requiring the presentation of additional data on the participant and enabling the participant to present checks for payment to the bank and select a paying bank for its checks; and the extended category – having the widest set of functional capabilities, intended for the operation of the Issuer, Partner-Banks and Dealers (Brokers) of the system, with provision of the possibility of generating an additional set of check circulation parameters for each category. In doing so, in order to take part in the system as a legal entity, the customer shall be assigned to the standard or extended category, which can only be obtained in the course of completing the corresponding status change procedure, which guarantees the execution of all of the organization's necessary checks.

According to further embodiments, methods are proposed for the payment, issue, transfer and verification of electronic checks with the use of the aforementioned payment system.

The method for implementing electronic check transfers, including the stage of user-data input and its authorization in the system as well as the input of transfer data differs in that it allows check transfer in real-time mode in accordance with the limitations presented in the electronic check record-keeping method and includes the

following stages: authorization in the System; receipt of account data; input of electronic check transfer parameters; verification of electronic check parameters; registration of requests for the implementation of electronic check transfer; transactions involving the sender's check exchange into several checks (transfer check, commission check, new balance check), including the presentation of checks for payment, the payment and issue of new checks; the placement of electronic check commissions in the Operator's account or in system operation mode when transferring electronic checks of the standard user category as well as those of the bank via a dealer (broker) – to the Dealer's (Broker's) account; placing the electronic check in the Payee's account; transactions involving the payee's exchange of checks into a single check (in cases where the payee has a balance in its account), including the presentation of checks for payment; finalization of transfer to be accompanied by the creation and signature of electronic documents, and participant notification of transfer execution. This method for implementing electronic check transfers is accompanied by the creation of all of the necessary legally-valid documents, with all completed actions reflected in the check register.

The method for the issue of electronic checks provided by the invention only allows for the issuance of electronic checks following the completion of mandatory stages by several user categories. The method of issue includes mandatory stages of the generation of a check-issue request by the issuer, as well as the bank's verification of money depositing in the issuer's settlement account (security for the issued check), conformity with request parameters and the bank's confirmation of electronic check issuance. Independent issue by a single participant is not possible. Issuance is accompanied by the creation of legally-valid documents and the reflection of transactions in the check register.

The method of electronic check payment also includes several stages and requires the obligatory participation of several user categories. The method includes the stages of the customer's sending an application to the bank for payment of the check; the bank's verification of the details specified in the application and the possibility of check payment; the bank's transfer of the invoice to the customer for placing the check; transfer of the check to be presented for payment to the bank by the customer, by means of payment of the issued invoice; the bank's sending of a request to the issuer for verification of the check; the issuer's verification of the check presented for payment; the issuer's

confirmation of the request by sending a verification notice; and the implementation of check payment.

Brief Description of the Drawing

Fig. 1 Schematic diagram of the System, which uses methods relating to the invention.

Fig. 2 Main units comprising the client application.

Fig. 3 Main units comprising the server application.

Fig. 4 Diagram of main client application DB sections.

Fig. 5 Diagram of main server application DB sections.

Fig. 6 Diagram of unit interaction in implementing electronic check transfers.

Fig. 7 Flow chart of the operating algorithm of the client K5 unit for parameter input and the implementation of transfers.

Fig. 8 Flow chart of the procedure for the execution of operations of the server S5 unit for registration and the implementation of electronic check transfers.

Fig. 9 Flow chart of the procedure for the exchange (combination) of electronic checks of the server S7 unit for electronic check management.

Fig. 10 Diagram of unit interaction in implementing the electronic check issue procedure.

Fig. 11 Diagram of unit interaction in implementing the electronic check payment procedure.

Fig. 12 Diagram of unit interaction in implementing the electronic check verification procedure.

The following designations are used in the aforementioned illustrative diagrams:

K1 – client unit for registration in the system (KB R)

K2 – client unit for authorization in the system (KB A)

K3 – client unit for data update, synchronisation of the client and server application DBs (KB ODS)

K4 – client unit for interaction with the server (KB VS)

K5 – client unit for parameter input, implementation of transfers (KB VDVP)

K6 – client unit for data input, sending of invoices for placing checks in an account (KB VDOS)

K7 – client unit for data input, sending of applications for the purchase, sale of electronic checks (KB OZPPECh)

K8 – client unit for data input, sending of applications for the payment of electronic checks (KB OZOECh)

K9 – client unit for the processing of received electronic check transfers (KB OPPECh)

K10 – client unit for the processing of invoices received for placing checks in an account (KB OPSZCh)

K11 – client unit for the electronic signature of digital documentation (KB TsP)

K11 (Issuer) – client unit for data input, sending of requests for the issue of electronic checks (KBE OZVECh)

K12 (Issuer) – client unit for the processing of requests received for the verification of electronic checks (KBE OPZVFECh)

K13 (Bank) – client unit for the processing of requests received for the issue of electronic checks (KBB OPZVECh)

K14 (Bank) – client unit for the processing of applications received for the payment of electronic checks (KBB OPZOECh)

K15 (Bank) – client unit for data input, sending of requests for the verification of electronic checks (KBB VDOZVFECh)

K16 (Issuer) – client unit for the processing of applications received for the purchase of electronic checks (KBE OPZPECh)

K16 (Dealer) – client unit for the processing of applications received for the purchase of electronic checks (KBE OPZPECh)

K17 (Dealer) – client unit for the processing of applications received for the sale of electronic checks (KBD OPZPrECh)

S1 – server unit for the registration, management of user accounts (SB RUUZP)

S2 – server unit for the authorization and verification of user parameters (SB APPP)

S3 – server unit for data update, synchronization of the client and server application DBs (SB ODS)

S4 – server unit for the verification of electronic check transfer parameters (SB PPPECh)

S5 – server unit for the registration and implementation of electronic check transfers (SB RVPECh)

S5 – server unit for user account management (SB UUSP)

S6 – server unit for the registration of applications, requests, invoices for placing checks in an account (SB RZZSZECh)

S7 – server unit for electronic check management (SB UECh)

S8 – server unit for the registration of electronic check transactions in the register (SB ROEChR)

S9 – server unit for the generation of digital documentation (SB GTsD)

S10 – server unit for the sending of online notices (SB OOU)

S11 – server unit for the issue of electronic checks (SB VECh)

S12 – server unit for the signature of electronic checks (SB PECh)

S13 – server unit for the processing and execution of applications, requests (SB OIZZ)

S14 – server unit for the write-off of electronic checks (SB SECh)

Detailed Description of the Embodiments

This invention is aimed at providing an electronic check settlement system (a "System") between organizations and/or individuals in real-time mode. Technically, implementation of this System can involve at least one server computer device for data processing and storage, the server application comprising it and client computer devices for data processing with the client applications comprising them, which provide for interaction between the client computer devices and the server computer device. The interaction of client computer devices with the server is carried out using the Internet network over protected communication channels. The protection of communication channels is provided by means of server and client applications with the use of encryption and electronic digital signature algorithms.

The methods provided herein are expressed in the corresponding operating algorithms of the server and client computer devices. The conformity of the operation of the devices to the given algorithms is ensured by execution of the sequence of program instructions provided in the server and client applications. The architecture of the server device or set of devices shall be based on the use of one or several computers combined by a local area network and shall at least include the following modules: a database

management system (DBMS), a web server (module providing for interaction with client applications via the Internet), an application server (module implementing main application logic and ensuring interaction with the DBMS), and a module of online messages (providing instant information to users about events within the System).

Client device architecture can be based on the following possible solutions of the client application: a separate client application with its own user interface (to be described hereinafter); a client application in the form of a module built into a standard tool for viewing Internet network resources (a web browser) with its own user interface to be reflected in the web browser (with the same units and interaction patterns as described hereinafter); in thin-client form based on the web browser, with the transfer of units for data processing and user interface generation to the server. In thin-client mode, only data input in the web browser user interface, electronic signature of digital documentation, data encryption, data transfer to the server, data reception from the server, decryption, and output to the web browser user interface are processed on the client device. In doing so, in case of implementation of the client application in the form of a built-in module or thin client, the client device and the entire System as a whole have equal functional capabilities with the System in case of using a client device based on a separate client application with its own interface.

The System described above does not restrict any possible implementations of this invention.

The structure of the client and server application in the form of functional units is given in Fig. 2 and 3. In the System implementation under consideration, the client application has several operating modes, which are determined by the status of the user that has authorized in the System. Additional units are allocated in the form the Issuer, Bank, Dealer (Broker). The remaining units can be accessible in any operating modes (possible restrictions are determined by the peculiarities of specific System implementation). Implementations are possible in which there is more than one client application, in each of which the corresponding set of units is accessible.

Participant categories

It is assumed that there are three main statuses of Participants in the System.

In doing so, the Participants shall be users (legal entities or individuals), with information about them presented in electronic form in the System database carrying out interaction

with the System using client computer devices. The status causes a set of rights to be granted to the Participant whereby it obtains the possibility of execution of certain algorithms in the System and acquires access to a certain volume of information available in the System.

The initial status is the Participant level, which is limited as to the set of possibilities within the System, and does not require the provision of documents for confirmation of the information entered by the user upon registration. At the initial level, registration is only possible as an individual. A legal entity can only be registered in the System in case of transfer from initial level to standard level. In doing so, in system operating mode, when the transfer of the electronic checks of users with standard status as well as those of the bank is performed via a dealer (broker), the initial category is used solely for the registration and sending of a status request for change of status (user category).

Standard status is the level designed for authorized Participants of the system, whether individuals or legal entities. In order to obtain this status, the Participant is obliged to provide additional information about itself and a number of documents for its confirmation. This status enables the Participant to present checks to the Bank for payment and select the paying bank for its checks.

Extended status is the level designed for the operation of the Issuer, Partner-Banks and Dealers (Brokers) of the System.

In order to ensure operability of the methods presented in the invention, the following Participants shall be obligatorily registered in the System:

- Issuer – the organization on whose behalf the issue of electronic checks is performed;
- Operator – the owner of rights to the System ensuring its functioning;
- at least one Bank – a partner-bank, in which the monetary funds serving as the security for issued checks are placed in the Issuer's settlement account;
- at least one Dealer (Broker) – a legal entity that executes electronic check purchase-and-sale transactions with the Participants on a permanent basis as well as the purchase of checks from the Issuer.

The Participants registered as the Bank, Dealer (Broker) can also act as customers and use standard system functionality.

An approximate diagram of a similar System is given in Fig. 1.

In order to acquire the corresponding status and obtain the possibility of working in the System, the Participant shall complete registration, which, depending upon the status requested, consists of a different number of stages. The first stage of registration in the System is performed by means of client application and includes the input of the participant's personal data, setup of safety parameters, familiarization with the offer agreement, and generation of electronic keys for EHS (equivalent handwritten signature). As a result of the first stage of registration, the Participant is assigned a unique registration number – a public key designed for EHS verification is registered with its name in the System server, and the Participant's data are recorded in the System database.

As a result of the first stage of registration, the user is assigned Initial status. In order to obtain Standard or Extended status, the Participant shall, via the System, generate an electronic application, in which it shall specify the category (individual/legal person) and enter all of the information requested. For confirmation of the entered information, the Participant shall provide duly-certified copies of documents. Only after successful completion of the document verification stage and, if necessary, entering into additional agreements (for the Bank, Dealer (Broker), Issuer), the Participant will be issued the requested status and provided with the corresponding set of rights within the System.

Participants with any status in the System can open an unlimited number of accounts expressed in the currency types supported by the System. Participants with a status greater than initial have the possibility of selecting the bank to serve as the paying bank for the check, whose nominal value is equal to the account balance. Upon the opening of an account, it will be assigned a unique number in the System, according to which the identification of the Participant can be performed unambiguously.

Electronic checks

The equivalent of monetary funds in the System is electronic checks. An electronic check is a bearer check in non-documentary form and contains the following obligatory details:

- check number – unique identifier of the check;
- description of the "check" included in the document text and expressed in the language of the country in which the document has been drawn up;
- requirement to pay a certain amount (nominal value of the check);

- name of the paying bank;
- indication of the account from which payment shall be executed;
- indication of payment currency;
- indication of the date and place of check execution;
- Issuer's (check drawer's) signature.

A non-documentary form of checks shall be considered lawful and checks drawn up in such form deemed a valid payment instrument in accordance with the Bank of Russia Regulation "On Cashless Settlements in the Russian Federation," which predicates the peculiarities of the electronic check processing methods described below.

The electronic check is presented in the form of a DB record. Electronic check signature is presented in the form of EHS (equivalent handwritten signature) obtained as a result of the cryptographic conversion of check details using the Issuer's closed key and ensures electronic check protection against forgery while allowing identification of the check drawer and determination of the absence of information distortion in electronic checks.

The record-keeping of electronic checks is performed in Participants' accounts. Upon completion of check exchange operations, only one check, whose nominal value is the balance in the account, can be referenced to one standard customer's account in the System. For the purposes of the record-keeping of checks presented to the bank for payment, specialized accounts are used, in which several electronic checks can be placed simultaneously.

Electronic checks are characterized by the following states:

- The check is in circulation – a valid check is at the disposal of one of the system Participants;
- The check has been submitted for payment (to the paying bank);
- The check has been submitted for payment via collection;
- The check has been paid.

A change in the state of the electronic check or change in the check owner can occur as a result of certain operations such as check issue, check transfer, check submission for payment, check submission for payment via collection, check payment, or collection of payment. All electronic check transactions shall be recorded in the check

register and accompanied by the generation of legally-valid documents certified with the EHS of the corresponding parties.

Electronic checks have a limited period of validity, upon whose expiry they are automatically exchanged for equivalent checks with a new number and date of issue.

Method for the implementation of electronic check transfers

The method for the implementation of electronic check transfers presented here consists of a certain sequence of main stages of the process, whether obligatory or non-obligatory for execution. The obligatoriness of stages is determined by the fulfilment of certain conditions disclosed in the algorithms described below. The peculiarities of the implementation of the algorithms such as programming language, architectural particularities of the software implementing the method are not limited by the given invention.

The method assumes that the Participant's computer device is configured so that it allows for the execution of programmed instructions of the client application implementing the method and interaction with the server computer device via the Internet.

The beginning of implementation of the transfer process is the user's start-up of the client application, during which the K2 client unit for authorization in the System is initialized. In the course of execution of this unit, verification of the Participant's account and its investment with the rights corresponding to the respective status shall be carried out. For the execution of these operations, the K2 client unit through the K4 unit for interaction with the server connects with the S2 server unit for authorization and verification of user parameters. In doing so, in the K4 unit, when a command and the necessary data are received, the following will be performed: generation of a request in the required format, encryption, signature of request, establishment of connection with the server, transfer of the request (via the Internet over a protected communication channel) and processing of the reply. It is assumed that the interaction of all client units with server units is carried out through the K4 unit and shall not be mentioned further.

The implementation of the client and server authorization unit is not the subject of this invention and can include various combinations of well-known methods for the authentication and authorization of users.

Obligatory for these units is the verification of the Participant's account, accessibility and correctness of the storage of electronic keys, which further will be used

for creating an equivalent handwritten signature (EHS) of requests and electronic documents as well as obtaining information about the status and corresponding rights of the Participant. On the basis of the Participant's status, the possibility is blocked for the Participant to carry out actions which are not provided for by its status; at that, blocking occurs both at the level of client application (absence of the corresponding user interface, execution of the algorithms of checks in the client application) and at the level of sever application (the server units comprising this application apply to the S2 unit in case of the processing of each request received in order to verify user status and other parameters).

The successful execution of the authorization unit guarantees that the Participant is not removed or blocked, its closed electronic key corresponds to the public key registered in the System.

The successful execution of the authorization unit is an obligatory condition for transfer to the next K3 unit for updating, synchronisation of client and server application data. The client K3 unit communicates with the server S3 unit for data update, synchronization of client and server applications. In the course of the execution of K3, S3 units, information is received about the current state of Participant's accounts, transfers received, and invoices for check placement in an account. Depending upon the Participant's status, the corresponding types of applications, requests are received and their states are updated. The execution of these units shall guarantee the Participant's access to information on all transfers, invoices for placing checks in an account, applications, requests and other information, both sent and received by the Participant (for example, by means of synchronization of the client application database with the server application database). The methods of implementation of these units are well-known and are not the subject of this invention. As an example of System implementation, a version is considered whereby the information received from the server is stored in the local database, whose diagram is shown in Fig. 4.

After the successful completion of operation of the K3 unit, the application will display the information received in the user interface, including information about all customer's accounts: number, name of the account, active balance in the account, number of the electronic check referenced to the account, details of the bank associated with the account, etc. The volume of information to be received and displayed shall be determined by the System implementation version.

The successful execution of the S3 server unit and K3 client unit for updating, synchronization of client and server application data is an obligatory condition for transfer to the K5 unit for parameter input and the execution of transfers.

For initialization of this unit, the Participant shall select the corresponding section in the user interface of the client application.

The K5 unit enables the user to enter the required initial data for transferring the electronic check. This unit can provide various possibilities for entering transfer parameters: direct input of parameters (input of the payee's account, check amount receivable or check amount to be written off, purpose of payment), selection of the variants of parameters from the lists of possible values (selection from the list of the sender's private accounts, selection of the recipient's account number from the corresponding reference book), generation of transfer on the basis of the invoice received for placing the checks in an account or an application of a certain type (for example, application for the purchase of electronic checks). The latter variant is based on the use of information received in the course of execution of the K3 unit for updating, synchronization of client and server application data and stored in the application by the method corresponding to the specific implementation of the System (in the random-access memory or read-only memory of the computer device). The method of input of transfer parameters can include automatic validation to be performed in the course of parameter input, whereby the user will immediately be notified of any errors. The method can include automatic calculation of the amount of commission to be collected for the transfer in the course of reception of transfer amount data by the application. The calculation of commission can be carried out by the module on the basis of the local data of the application (to be stored in the random-access memory or DB, downloaded, for example, at the stage of reception of account data) or on the basis of the commission rate, to be downloaded from the server by means of a separate request. This possibility can be used for implementation of more complicated commission setup variants such as dependence of the commission rate upon the Participant's status in the group (in this case, in order to determine the commission, both data on the sender and data on the recipient of the transfer will be required), possibility of setup of the individual commission of the Participant, etc. After calculation of the commission, the module will notify the user about the sum of

commission to be collected for the transfer and the sum to be written off (or sum receivable, depending upon the parameter filled in).

An example of the operating algorithm of the K5 unit for parameter input, execution of transfers is given in Fig. 7.

Implementations are possible whereby, in the course of input of transfer parameters, information about the transfer recipient is downloaded on the basis of the recipient's account number and displayed to the participant in order to minimize the risk of input of incorrect data.

The method can include a stage for the preliminary verification of transfer parameters, in the course of which the K5 unit will generate an electronic request for data verification and transmit it to the S4 server unit for verification of electronic check transfer parameters. The request includes the sender's account and transfer recipient's account numbers, value, currency of the transfer. In the course of checks, the S4 unit will determine whether the execution of transfer with the parameters specified is accessible. Execution of the S2 server unit is triggered, in the course of which the necessary verifications of both the sender (including a check of the request EHS) and the transfer recipient (including verification of the accessibility of the recipient's account) are performed. The retrieval of data from the DB about the electronic check available in the transfer sender's account, comparison of the nominal value of the check with the amount to be written off (implementations are possible, whereby the blocking of a separate amount in the account, followed by a comparison of the amount to be written off against the sum of accessible active balance occurs) and other checks provided by the peculiarities of the specific implementation of the System are performed. The checks shall be performed by collation with the information stored in the System database, checks of the account settings in the DB, execution of the algorithms of verification of the electronic digital signature.

The K5 client unit for parameter input and the execution of transfers receives information from the S4 unit about the results of check and displays to the user either a message on the resulting error, or a window with information on the transfer, which the customer shall repeatedly confirm. At this stage, the module can display any data on the transfer (amounts, payee's name, INN, etc.), corresponding implementations of the method.

Having received confirmation of the transaction from the participant, the K5 unit will generate an electronic request to execute the transfer containing the number of the account for write-off, the number of the invoice for placing checks in an account, amount, currency of transfer, purpose of payment, and will transfer it to the S5 server unit for the registration and execution of electronic check transfers.

Having received a request for execution of the transfer, the S5 unit will execute the transfer registration procedure. In the course of this procedure, in order to check the request received, transfer to the S4 unit is performed for verifying electronic check transfer parameters (all the data received are transferred), and after its successful execution, the information on the transfer will be recorded in the System database, the amount of commission will be calculated and recorded. In cases where the S4 unit returns an error, the transfer will not be registered, and the erroneous result of transfer execution will be returned to the K5 client unit (for example, state of the transaction, error code).

At the stage of the sending and registration of the transfer execution request, the unit for the generation and storage of digital documentation can be executed (S9). The method implies the inclusion of this unit either in the server application or in the client application. As a result of operation of this unit (in the given case, procedures for the generation of an application for execution of the transfer), a separate electronic document will be generated (for example, in pdf format), which contains all details of the application for electronic check transfer, and the Participant's EHS will be confirmed through the client unit of electronic signature of digital documentation (K17). The method implies various variants for storing this document, for example, the document can be transmitted to the server, saved along with EHS and other information in the application database and then become accessible to all stakeholders through specialized services of the server application.

In cases where the document has been generated on the server, the unit for the electronic signature of digital documentation (K17) shall implement the procedure for downloading electronic documents from the server.

After the successful recording of the transfer in the server DB, the S5 unit will execute the transaction implementation procedure. An example of implementation of this procedure is given in Fig. 8. The input parameters for this procedure are all of the data received about the transfer being executed.

The S5 unit for the registration and execution of electronic check transfers receives data from the System database about the electronic check in the transfer sender's account and amount of commission ("Information about user accounts," "Information about electronic checks," "Information about electronic check transfers" sections).

If the nominal amount of the balance check on the sender's account coincides with the amount of transfer and, at that, the commission for transfer is not collected, the electronic check will be transferred from the sender's account directly to the recipient account.

For transferring a check, the S5 unit initiates execution of the S7 server unit for electronic check management. In doing so, the procedure for electronic check transfer is triggered, to whose input the following data are transmitted: number of the electronic check, number of the transfer sender's account, number of the transfer recipient's account. In implementing the procedure, the modification of information in the DB in the "Information on user accounts" is performed: the information about the check in the transfer sender's account will be removed, the data on the number of the balance check will be introduced into the account record; the information about the check holder will be modified in the "Information about electronic checks" section.

Within the framework of this procedure, the execution of the S8 unit is initiated for the registration of electronic check transactions in the Register. The input parameters upon triggering of the procedure for recording the check transfer transaction in the Register are as follows: number of the electronic check, number of the transfer sender's account, number of the transfer recipient's account, type of transaction ("check transfer"). Possible types of transactions in the Check Register are as follows: "check issue," "check transfer," "check submission for payment," "check submission for payment via collection," "payment of check," "check collection." On the basis of input parameters, the S8 units retrieves the necessary data from the DB, introduces records into the "Electronic check register" DB section containing at least the following information: number, date, time of transaction, amount, currency, number of the check being transferred, sender's account and recipient's account numbers, type of transaction, data on balances in the accounts. After successful recording of the transaction in the Check Register, the procedure for electronic check transfer of the S7 unit will be terminated.

Implementations are possible, whereby in a similar situation, when the whole nominal value of the check shall be transferred to the recipient, the electronic check will first be transferred to the Operator, and the Operator will transfer the check to the transfer recipient. The check transfer (as in all further references thereto) is carried out within the framework of the procedure for electronic check transfer of the S7 server unit for electronic check management described above.

If the aforementioned condition is not met (the nominal value of the check shall not be transferred to the recipient in full), the S5 unit will trigger the procedure for exchange of the electronic check of the S7 unit for electronic check management. The S5 unit transfers the following data to the input of this procedure: number of the electronic check whose nominal value is the balance in the sender's account, nominal values of the electronic checks into which the exchange shall be performed, equal to the amount of transfer and amount of commission to be collected for the transfer.

Within the framework of the procedure for electronic check exchange of the S7 unit, the sender's electronic check will be transferred to the System Operator (the procedure is executed for electronic check transfer of the S7 server unit for electronic check management, to whose input the following data are transferred: number of the electronic check, number of the transfer sender's account, number of the Operator's account).

The Operator submits the electronic check received for payment to the paying bank. Submission of the electronic check for payment is carried out by execution of the procedure for submission of the check for payment of the S7 unit for electronic check management, to whose input the following data are transferred: number of the electronic check, information about the bank (registration number), number of the account from which the check is presented (Operator's account). In implementing this procedure, the number of the specialized bank account is determined, to which the check will be transferred. Then the check transfer is performed similarly to the standard check transfer procedure. One difference is the change of the electronic check state in the System DB to the "submitted for payment" state ("Information about electronic checks" section) and the indication in the Check Register of the type of transaction: "submission of the check for payment" or "submission of the check for payment via collection" in case of execution of the S8 unit for registration of electronic check transactions in the Register. The type of

transaction "submission of the check for payment via collection" is used when the bank to which the electronic check is being presented for payment and the paying bank for the given check do not coincide.

After successful execution of the procedure for submission of the check for payment, insofar as the bank to which the electronic check is submitted for payment and the paying bank for the given check coincide, the execution of the check write-off procedure of the S7 unit is triggered, to whose input the electronic check number is transferred. Within the framework of this procedure in the "Information about electronic checks" section, the data on the paid check will be changed, and the execution of the S8 unit for registration of electronic check transactions in the Register will be triggered. Within the framework of the procedure for recording the check write-off transaction in the Register in the "Electronic check register" section, a record will be introduced containing the following data: number, date, time of the transaction, value, currency, number of the check to be written off, number of the account to which the check being written off refers, type of transaction, data on the balance in the given account. Execution of the electronic check write-off procedure is only possible in case of payment of the check and the transmitting of real monetary funds equal to the nominal value of the check to its bearer or in case of set-off of the monetary funds released with payment of the check upon the purchase of new electronic checks with the System Issuer by the person that has submitted the check for payment.

After successful recording of the transaction in the Check Register, the procedure for electronic check write-off of the S7 unit will be terminated.

Using the funds received (released), the Operator will buy new checks of the required nominal values from the Issuer:

- Check for the amount of transfer.
- Check for the amount of the commission (can be equal to 0, in which case no check will be issued).
- Check for the amount of balance (balance can be equal to 0, in which case no check will be issued).

To this end, the S7 unit, within the framework of the electronic check exchange procedure, triggers sequentially the execution of the S11 unit for electronic check issue for each of the checks in question. Data shall be transferred to the input of this unit on details

of the new checks, which at least include the following: nominal value, check currency, data on the paying bank. As the payer for new checks, the paying bank for the check transferred for exchange will be indicated.

In implementing the S11 unit, the necessary data are retrieved from the system DB for indication of all check details, the execution of the S12 unit for electronic check signature is triggered (whereby check signature on behalf of the Issuer is created by means of execution of the electronic digital signature algorithms), and a record on the new electronic check will be created in the "Information about electronic checks" DB section.

In implementing the electronic check issue, the S11 unit will cause the execution of the procedure for recording the check issue transaction of the S8 unit for registration of electronic check transactions in the Register. As the input parameters in cases where this procedure is triggered, the following data are transferred: number of the electronic check, number of the account to which the issued check will be referred to (Issuer's account), type of transaction ("check issue"). Within the framework of this procedure, a record shall be introduced into the "Electronic check register" DB section containing the following data: number, date, time of the transaction, value, currency, number of the issued check, type of transaction, number of the account to which the issued check will be referred, data on the balance in the given account. After successful recording of the transaction in the Check Register, the operation of the S11 unit for electronic check issue will be terminated for the check for which unit execution has been triggered.

After successful termination of operation of the S11 unit, the issued checks will be transferred to the Operator (in accordance with the procedure for electronic check transfer of the S7 unit for electronic check management).

If the balance check has been issued successfully, the Operator will transfer this check to the transfer sender. After successful termination of this action, the procedure for electronic check exchange will be terminated for the transfer sender's check.

Within the framework of operation of the S5 unit, the Operator will transmit a check for the amount of transfer to the recipient's account. From the database ("Information on user account" section), the S5 unit will retrieve information on the balance in the transfer recipient's account and account settings. In cases where there is a balance check in the recipient's account or a bank different from the paying bank for the transfer check is specified in the settings of the given account, the S5 unit will trigger the

procedure for electronic check exchange (combination) of the S7 unit for electronic check management (Fig. 9). Within the framework of this procedure, the electronic checks (check) shall be transferred from the recipient's account to the System Operator's account.

The Operator shall submit the electronic checks (check) received for payment to the bank specified as the paying bank according to the transfer recipient's "balance check," or to the Bank specified in the settings of the account in cases where the balance is missing. Apart from the information provided, other methods are possible for determination of the bank which will be the payer according to the new check of the transfer recipient, for example, instead of using the account settings and data of the current balance check, a paying bank can be selected according to the electronic check with a larger nominal value.

The submission of checks to the Bank for payment shall be performed within the framework of the procedure for submission of the check for payment of the S7 unit for electronic check management.

Check submission for payment to a bank different from the bank specified as the paying bank for the given check shall be carried out in accordance with the mechanism of check presentation for collection. This procedure guarantees the availability of a sufficient amount of monetary funds in the Issuer's settlement accounts in partner-banks acting as security for the checks issued by the Issuer.

For the electronic check submitted for payment to the paying bank (in the implementation being described, the balance check from the transfer recipient's account), execution of the standard check write-off procedure of the S7 unit for electronic check management is triggered.

Using the released funds, the Operator acquires a new check from the Issuer, whose nominal value is equal to the sum of nominal values of the checks submitted for exchange (or equal to the nominal value of the check submitted for exchange to the check of another paying bank).

To this end, the S7 unit, within the framework of the procedure for electronic check exchange (combination), triggers the execution of the S11 unit for electronic check issue, transferring to its input the nominal value, currency of the check (equal to the currency of checks to be combined), and data on the paying bank. The payer for the new check will be the bank that has performed payment of the checks submitted for exchange.

The Issuer shall transfer the issued check to the System Operator. The Operator shall transfer the new check to the transfer recipient. After the successful implementation of these actions, the procedure for electronic check exchange (combination) will be terminated.

Implementations are possible whereby the exchange of transfer of the sender's checks is not performed, and the record-keeping of any number of electronic checks is maintained in the recipient's account. For example, in the implementation being described, the procedure for the exchange of electronic checks is not executed if the transfer implementation is carried out within the framework of check submission for payment and the check is transferred to a specialized bank's account.

In cases where a commission is collected for the transfer, the S5 unit will trigger the execution of the S13 unit for placing the commission check in an account. In the implementation being described, if there is a balance check in the Operator's account or a bank differing from the paying bank for the commission check is indicated in the settings of the Operator's account, the S13 unit will also initiate the execution of the procedure for electronic check exchange (combination) of the S7 unit for electronic check management, in the course of which a new check including the amount of commission for the completed transfer shall be placed in the Operator's account. The order of exchange of the operator's electronic checks is similar to the exchange of the transfer recipient's check exchange, except transactions involving check transfer to the Operator and reception of the check from the System Operator. It is also necessary to take into account that if the check transfer is performed via a dealer (broker), then a commission shall be charged in the S13 unit to the Dealer (Broker) acting as an intermediary in the implementation of transfer rather than to the Operator. Check exchange transactions are always performed via the Operator, irrespective of the recipient of commission.

In implementing the procedure for execution of the transaction of the S5 unit for the registration and execution of electronic check transfers, the execution of the S9 unit is triggered for the generation and storage of digital information. As a result of operation of this unit, on the basis of the information about the transfer parameters being received, digital reporting documentation is created for the purposes of its signature by Participants' EHS and providing the possibility of further printout.

In the implementation being described, in the course of operation of the S9 unit, the following documents are generated: Certificate of acceptance of the electronic check, Certificate of the services provided, pro forma invoice. Documents stemming from execution of the K17 unit for the electronic signature of digital documentation are signed with the EHS of the corresponding parties.

After successful execution of the transfer and generation of the required documentation, the S5 unit will initiate the execution of the S10 unit for sending online notices. Information about the transfer recipient and type of message being sent is transmitted to the input of this unit. As a result of execution of this unit, the execution of the K3 unit is triggered for updating, synchronization of client and server application data. After receiving information about the transfer, execution of the K17 unit can be triggered for the electronic signature of digital documentation for the purposes of signature of the Certificate of acceptance of the check by the transfer recipient.

Under termination of operation of the S5 unit for the registration and execution of electronic check transfers, a message is generated with the result of the transaction, which is transmitted to the K5 unit for parameter input, execution of transfers and storage of information about payments of the transfer sender's application. Implementations are possible (operating modes of applications) whereby the procedure of execution of transaction of the S5 unit for the registration and execution of electronic check transfers is not executed in online mode, i.e. after successful termination of the procedure for registration of the transfer of the S5 unit, a message will be sent at once to the transfer sender (K5 unit) about the fact that the transfer has been received by the System, and the transaction execution procedure is performed later.

In cases of reception of the message about termination of the transaction, the K5 unit for parameter input, execution of transfers and storage of information about payments of the transfer sender displays information about the result of transfer to the user, triggers execution of the K3 unit for updating, synchronisation of client and server application data, upon whose operation termination the updating of information about the current balance in user accounts is carried out.

Method of electronic check issue

Below, the method is presented for electronic check issue to be used in situations different from transactions involving the automatic exchange of electronic checks in the

implementation of transfers. This method is aimed at ensuring the safety of the process of the reception of new checks for circulation issued using real monetary funds received in the issuer's settlement account, for example, in purchasing checks by a dealer (broker), rather than using payment for other electronic checks.

The beginning of the process of electronic check issue is the launch of the client application by the user with the Issuer's account, in the course of which the client K2 unit for authorization in the System is initialized, after which execution the K3 unit will be started for updating, synchronization of client and server application data. Successful execution of the K2 and K3 units is an obligatory condition for transfer to the K11 unit for data input and the sending of requests for the issue of electronic checks. For initialization of this unit, the Issuer shall select the corresponding section in the user interface of the client application.

The K11 unit provides the user with the possibility of input of the required initial data for generating a request for the issue of an electronic check. This unit can provide various possibilities for entering the request parameters, e.g. direct input of parameters, selection of parameter variants from the lists of possible values (selection from the list of paying banks), generation of the request on the basis of the check purchase request received from the dealer (broker).

The obligatory parameters of the request to issue an electronic check are the Issuer's details (registration number, description, etc.), nominal value, currency of the check being issued, paying bank, number of the Issuer's settlement account in which payment for the check will be placed, data on the check buyer and payer (name, INN, registration number, data on the purchase application, buyer's account for placing the check in an account). After the Issuer's correct completion of all required parameters of the request, the K11 unit will generate a request to issue a check in the form of an electronic document certified with the Issuer's EHS. The K11 unit will transmit the request to the S6 server unit for the registration of applications, requests, invoices for placing checks in an account.

The S6 unit executes the procedure for verification of the request to issue a check; execution of the S2 server unit is triggered, in the course of which the necessary verifications are carried out of both the sender (including verification of the request EHS) and the request recipient. In case of successful fulfilment of all verifications, the request

will be registered on the server. The records will be introduced into the DB in the "Information about applications, requests, accounts for placing checks in the account" section. A message on the availability of a new request will be sent to the Recipient (paying bank for the check being issued) by means of the S10 unit for sending online notices.

Upon entry into the Bank System or in case of an online notice being received, the K3 unit (update, synchronisation of client and server application data) for the Bank's client application by means of interaction with the S3 unit will download a request from the server to issue the electronic check.

In doing so, the S3 server unit for data update and synchronization of client and server application DBs will perform verification of the fact that request downloading is being carried out solely by the recipient with the "Bank" status specified in the request.

After successful reception of the request, triggering of the K13 unit for the Bank's client application is performed for processing the requests received to issue electronic checks. The K13 unit will display the information in the user interface about the check issue request and provide an option to the Bank to decline or confirm the request.

Having received the request, the Bank verifies the availability of payment for the check being issued that has been received from the payer indicated in the request for electronic check issue, compares the data in the Issuer's request (for example: nominal value of the check, currency, number of the check purchase application, payer's details) with the data from the Issuer's account statement. In cases where monetary funds for purchase of the check are received in the Issuer's account, the Bank, through the client application, will confirm the Issuer's Request. In doing so, the K13 unit for processing received requests for electronic check issue shall generate electronic confirmation of the request and transfer it to the S13 server unit for the processing and execution of applications, requests.

The S13 unit, in the course of the procedure for confirmation of the application for the issue of an electronic check, will retrieve data from the DB about the request to issue the check being confirmed and perform the necessary verifications (including the triggering of the K2 unit for verification of the Bank's account); after their successful completion, execution of the S11 unit is triggered for the issue of electronic checks. Data on the details of the new check received from the request for issue are transmitted to the

input of this unit, which include the following: nominal value, check currency, data on the paying bank. A description of the S11 unit is given above (see Method for the execution of electronic check transfers).

Upon the successful termination of operation of the S11 unit, the S13 unit, in the course of the procedure for confirmation of the application to issue the electronic check, triggers execution of the S5 unit for the registration and execution of electronic check transfers (transfer registration procedure) for the purposes of the automatic creation and execution of transfer of the check issued from the Issuer's account to the check buyer's account. Data from the application for issuing the electronic check retrieved from the DB, i.e. recipient's account, nominal value, check currency, etc., shall be transferred to the input of the procedure for registration of the transfer of the S5 unit.

After termination of operation of the procedure for registration of the transfer of the S5 unit, the procedure shall be executed for implementation of the operation of the S5 unit (in accordance with the sequence given above).

The S13 unit will transmit the successful result of processing the request to the K13 client unit of the Bank's application, which records the updated state of the processed request for check issue as well as, through the S10 unit, to the client application of the sender of the check issue request (Issuer) (to the S3 unit for data update, synchronization of client and server application DBs, which updates and displays to the Issuer the updated state of the request and information about the automatic transfer of the check to the buyer).

Method of payment of electronic checks

Below, a method is presented for the payment of electronic checks to be used in situations where the check is submitted to the bank for the purposes of receiving real monetary funds according to the check in the bearer's settlement account. This method is aimed at ensuring the safety of the process of receiving payment according to the check, both on the part of the check bearer and on the part of the bank performing payment.

The beginning of the process of submission of the electronic check for payment shall be the user's launch of the client application, in the course of which the K2 client unit for authorization in the System is initialized, after which execution of the K3 unit will be launched for the updating and synchronization of client and server application data. The successful execution of the K2 and K3 units is an obligatory condition for transfer to

the K8 data for data input, sending the applications for the payment of electronic checks. The K8 unit can be accessible to various user categories (for example, only to legal entities with a higher status in the System than initial).

For initialization of this unit, the System Participant selects the corresponding section in the user interface of the client application.

The K8 unit provides the user with the possibility of input of the required initial data for generating an application for electronic check payment, such as the account from which the check write-off will be carried out, nominal value of the check, bank details for placing the payment. On the basis of the data entered by the user, the K8 unit determines the bank acting as the payer according to the Participant's check.

Following correct completion of the obligatory details of the application, the K8 unit will generate the application for payment of the electronic check in the form of an electronic document certified with the user's EHS. The K8 unit transfers the application to the S6 server unit for the registration of applications, requests, accounts for placing checks in an account.

The S6 unit will execute the procedure for verification of the application for payment of the electronic check – execution of the S2 server unit is triggered, in the course of which the necessary verifications are carried out with respect to both the sender (including verification of the request EHS) and the request recipient, and verification of the correctness of the bank details of the customer for placing the payment (in particular, according to the applicable bank reference book according to BIC) and the sufficiency of funds in the sender's account is executed, along with the other verifications necessary for proper execution of the transaction.

In case of the successful fulfilment of all verifications, the application will be registered on the server. The records will be introduced into the DB in the "Information about applications, requests, accounts for placing checks in an account" section. A message will be sent about the availability of the new application to the recipient (paying bank) by means of the S10 unit for sending online notices.

When the Bank enters into the System or in case of the reception of an online notice, the K3 unit (updating, synchronization of client and server application data) of the Bank's client application, by means of interaction with the S3 unit, downloads the application for payment of the electronic check from the server. In doing so, the S3 server

unit for data update, synchronization of client and server application DBs performs verification of the fact that request downloading is being carried out solely by a recipient with the "Bank" status specified in the request.

After successful reception of the request, triggering of the K14 unit of the Bank's application is performed for processing the applications received for the payment of electronic checks. The K14 unit will display the information about the application for payment of the electronic check in the user interface and provide the Bank with the option to decline or confirm the application.

Having received the application, the Bank will verify the correctness of the Application parameters, accessibility of the necessary amount of funds in the Issuer's settlement account. Confirmation of the application shall be an invoice issued through the System for placing the check in an account.

The Bank issues the invoice by means of execution of the K6 client unit for data input, sending invoices for placing checks in an account. In the course of execution of this unit, an invoice will be generated whose parameters are determined on the basis of the application for payment of the check and partially completed by the Bank. The Bank shall specify the details of its account allocated for checks to be submitted for payment. As the basis for the invoice, it is necessary to specify the number of the application for payment of the check and indicate the bank details of the check bearer for placing the payment.

Following the correct completion of invoice details, the K6 unit will generate the invoice to place the check in an account in the form of an electronic document certified with the user's EHS. The K6 unit will transfer the invoice to the S6 server unit for the registration of applications, requests, invoices for placing checks in an account.

The S6 unit executes the procedure for verification of the parameters of the invoice for placing checks in an account – execution of the S2 server unit is triggered, in the course of which the necessary verifications are performed of both the sender (including verification of the request EHS) and the request recipient. In case of the successful fulfilment of all verifications, the invoice will be registered on the server. The records are introduced into the DB in the "Information about applications, requests, invoices for placing checks in an account" section. A message on the availability of the new invoice will be sent to the Recipient by means of the S10 unit for the sending of online notices.

Following successful issue of the invoice, the K14 unit of the Bank's client application for the processing of applications received for the payment of electronic checks will execute the update of application state. To this end, the corresponding notice shall be sent to the S13 server unit for the processing and fulfilment of applications, requests, in the course of which the new state of the application will be recorded in the server DB and a notice will be sent to the sender.

In cases where the Application cannot be satisfied (the check bearer has not passed the necessary verifications), the Bank will select the "Decline the application" option and indicate the basis for the denial. In doing so, the K14 unit for the processing of applications received for the payment of electronic checks will send a command to the S13 server unit for the processing and execution of applications, requests (the procedure for denial of payment by the S13 unit is triggered). In the course of execution of this procedure, data on the application being declined will be retrieved from the DB, the necessary verification will be performed and the triggering of the S9 unit for the generation of digital documentation will be carried out (procedure for generation of the Notice on refusal to pay the check). Data on the customer, bank, currency of the check being paid as well as the basis for refusal shall be sent to the input of this procedure. The document, due to execution of the K17 unit for the electronic signature of digital documentation, will be signed with the Bank's EHS. The S13 unit will notify the customer of the change in the state of the application being sent by the customer.

The Participant, having received the aforementioned invoice to place the check in an account, will execute a transfer to the bank into the specialized account in the System specified. The execution of transfer is carried out in accordance with the method described above for the execution of electronic check transfers.

The Bank, having received the transfer (K9 unit for the processing of received electronic check transfers), will perform verification of the fact that the check bearer's details specified in the purpose of payment, number of the application and other parameters of the transfer conform to the parameters of the confirmed check payment application and initiate the procedure for verification of the electronic check received. The method for electronic check verification is described below.

Only when the Notice on verification of the check and change in the state of the Request for verification in the System to "confirmed" has been received will the bank

perform payment of the check by transferring the respective monetary funds to the Participant's settlement account (and if the Participant is a credit organization, then to its correspondent account) and write off the check.

The process of write-off of an electronic check occurs upon selecting the corresponding options in the user interface of the Bank's application. In doing so, the execution of the K18 unit for electronic check write-off is triggered. The K18 unit, on the basis of the confirmed request for verification, will generate an electronic request to write off the electronic check containing the number of the request for verification, certify it with the Bank's EHS and send it to the S14 server unit for the write-off of electronic checks. The K18 unit can additionally include execution of the stage of the Bank's input of the parameters of the payment order on whose basis the transfer of real monetary funds will be carried out to the check bearer.

The S14 server unit for the write-off of electronic checks executes the stage of verifications, in the course of which the data on the request confirmed for verification of the check are retrieved from the DB; the K2 unit is triggered for verification of the Bank's account and request EHS, and verification of the electronic check being written off is executed. After successful completion of all verifications, the S14 unit will carry out write-off of the check, and the corresponding changes will be introduced into the DB in the "Information about electronic checks" section (the electronic check state and other required parameters will be changed).

In implementing the write-off of the electronic check, the S14 unit triggers execution of the procedure for recording the check write-off transaction of the S8 unit for the registration of operations with electronic checks in the Register. As the input parameters in cases where this procedure is triggered, the following data will be transferred: number of the electronic check, number of the account in which the check being written off was placed, type of transaction ("check write-off (paid)"). Within the framework of this procedure, a record containing the following data will be introduced into the "Electronic check register" DB section: number, date, time of transaction, value, currency, number of the check being written off, type of transaction, number of the account to which the check refers, data on the balance in the given account.

After successful recording of the transaction in the Check register, the S14 unit performs updating of the state of application for check payment, request for verification

(into "payment of the check has been performed"). The corresponding notices shall be sent to System participants by means of the S10 unit.

Method for the verification of electronic checks

The method for verification of the electronic check enables the Bank to receive confirmation of the authenticity of the check to be submitted for payment and shall be an obligatory stage preceding payment of the check.

The verification process begins when the Bank, having received the electronic check transfer to the specialized account with an indication of the data in the purpose of payment on the application for payment of the check, generates a Request for verification of payment of the submitted electronic check.

In the bank's selection of the "Request for verification" option, execution of the K15 unit for data input and sending of requests for electronic check verification will be initiated. The K15 unit will provide the bank with the possibility of automatic completion of the parameters of the request on the basis of the transfer received. The request for verification contains data on the electronic check as well as on the person that has submitted the check for payment.

The K15 unit will certify the request completed in the form of an electronic document with the Bank's EHS and send it to the S6 server unit for the registration of applications, requests, invoices for placing checks in an account.

The S6 unit executes the procedure for verification of the parameters of the request for verification of the electronic check, which includes automatic verification of the electronic check details, in the course of which the check EHS is verified (the algorithm of verification of the electronic digital signature will be executed with the use of the Issuer's public key and record on the check in the DB, which guarantees the invariability of all details of the electronic check), as are the current state of the electronic check and the request sender's account (execution of the S2 server unit is triggered).

In case of the successful execution of all verifications, the S6 unit will determine the Issuer's registration number and save the request on the server. The records will be introduced into the DB in the "Information about applications, requests, accounts for placing checks in an account" section. A message on the availability of the new request will be sent to the Recipient (Issuer) by means of the S10 unit for the sending of online notices.

When the Issuer enters into the System or in case of the reception of an online notice, the K3 unit (updating, synchronization of client and server application data) of the Issuer's client application, by means of interaction with the S3 unit, downloads the request for verification of the electronic check from the server. In doing so, the S3 server unit for data update, synchronization of client and server application DBs performs verification of the fact that request downloading is being carried out solely by the recipient with the "Issuer" status specified in the request.

Following successful reception of the request, triggering of the K12 unit of the Issuer's client application is performed for processing the requests received for verification of electronic checks. K12 unit will display the data in the user interface on the request for verification of the electronic check and provide the Issuer with an option to decline or confirm the request.

The Issuer, having received the Request for verification, will trace the electronic check history with the use of the Check Register – verify the correctness of the check details (the System provides the possibility of viewing the electronic check in graphical form), reliability of the data on the check bearer.

If all of the verifications have been performed successfully, the Issuer will confirm the Request for verification of the check.

In doing so, the K12 unit for processing of the requests received for payment of electronic checks will send the request to the S13 server unit for the processing and execution of applications, requests (the procedure for confirmation of the request for verification of the check of the S13 unit will be triggered). In the course of execution of this procedure, the data on the confirmed request will be retrieved from the DB, the necessary verifications will be performed and the triggering of the S9 unit for the generation of digital documentation will be carried out (procedure for generating the Notice on electronic check verification). The data on the electronic check received on the basis of the request for verification will be transferred to the input of this procedure. The document will be signed by the Issuer's EHS due to execution of the K17 unit for the electronic signature of digital documentation. The S13 unit will notify the Bank about the change in the state of the application sent by the Bank.

In cases where the Request cannot be confirmed, the Issuer will select the "Decline the request" option and specify the basis for refusal. Denial of the request occurs similarly to refusal of the application for check payment by the Bank.

CLAIMS

1. An electronic system of settlement by means of electronic checks containing at least one server computer device for data processing and storage, a server application and client computer devices for data processing comprising it, including the firmware client modules ensuring interaction of the client computer devices with the server device, with provision of the possibility of connection between the client computer devices and the server computer device over communication channels of the Internet network and the possibility of protection of the communication channels by means of the hardware and software facilities of the server and client modules with the use of encryption and electronic digital signature, wherein the client and server applications contain at least an interconnected unit for user authorization in the system, a unit for the updating and synchronization of client and server application data as well as a unit for the input of parameters of the execution of transfers and storage of information on payments of the client application, which is connected by hardware and software facilities with the units for verification of the parameters of electronic check transfers connected with the unit for the authorization and certification of user parameters and a unit for the registration and execution of electronic check transfers of the server application, which are connected by feedback channels with the units for electronic check management, for placing the commission check in an account and sending notices to the user in real-time mode, connected to the unit for the updating and synchronization of client and server application data as well as inclusion of the electronic signature unit in the composition of the client application, which is connected by hardware and software facilities with the unit for the generation and storage of digital documentation of the server application, connected to the unit for the registration and execution of electronic check transfers; in doing so, the electronic check management unit of the server application is rendered as connected, by means of hardware and software facilities over feedback channels, with the interconnected units for the registration of transactions with electronic checks in the register and issue of electronic checks, as connected to the unit for electronic check signature.

2. The electronic system according to claim 1, wherein the client application units are rendered as grouped into modules by categories corresponding to the user status determined by the unit for the authorization of the client and server applications, with

provision of the possibility of pre-setting a set of parameters of check circulation for each category.

3. The electronic system according to claim 2, wherein the client application units are rendered as grouped into modules by three categories including the initial level, with a minimum set of check circulation parameters, with provision of the possibility of submitting checks for payment to the bank and selecting a paying bank for its checks, and the extended level, with provision of the possibility of generating an additional set of check circulation parameters for operation of the Issuer, partner-banks and Dealers (Brokers) of the system.

4. The electronic system of settlement by means of electronic checks according to any of claims 1 or 2, wherein the client device includes a separate client application with its own user interface and/or a client application in the form of built-in module in the standard means for viewing the resources of the Internet network with its own user interface, to be displayed in the web browser, and/or a client application rendered in the form of thin client on the basis of a web browser with provision of the possibility of transferring the units for information processing and generation of the user interface to the server.

5. The electronic system of settlement by means of electronic checks according to any of claims 1, 2 or 4 wherein the client device containing a user application in thin-client mode has been rendered with provision of the possibility of data input in the web browser user interface, electronic signature of digital documentation, data encryption, data transfer to the server, data reception from the server, decryption, output to the web browser user interface.

6. A method for implementing electronic check transfers in the electronic check settlement system containing a server computer device for data processing and storage, an information display device and the server application comprising it, and a client computer processing device containing a device for information display and client applications connected over channels of wireless and/or Internet communication, comprising the sequentially implemented stages of the participant authorization in the system; the accounts data reception; input of electronic check transfer parameters; verification of electronic check parameters; registration of a request for execution of the electronic check transfer; execution of the transaction of the sender's check exchange into several checks including the transfer

check, commission check, balance check; submission of checks for payment, payment and issue of new checks; placing the electronic commission check in the system operator's account and/or in the Dealer's (Broker's) account upon the transfer of electronic checks of the standard user category as well as in the bank account via a dealer (broker); placing the electronic check in the participant's account; finalization of the transfer accompanied by the creation and signature of electronic documents, notifying participants of execution of the transfer.

7. The method according to claim 6, additionally comprising the transaction of the recipient's exchange into one check to be performed after the stage of placing the electronic check in the participant's account, including the submission of checks for payment, in particular, via the collection, payment and issue of new checks.

8. The method according to claim 6, wherein the authorization of the participant in the system includes the user's launch of the client application, in the course of which the client authorization unit will be initialized and the account data will be entered and transferred, via the K4 unit for interaction with the server, by means of the Internet network over a protected communication channel, to the S2 server unit for the authorization and verification of user parameters where verification of the participant's account, the accessibility and correctness of storage of the electronic keys is performed, with provision of the possibility of generating the equivalent handwritten signature (EHS) for requests and electronic documents, the participant's status and corresponding rights are confirmed, synchronization of client and server application data is carried out, with provision of the possibility of outputting the information to the client and server application terminal about the current state of the participant's accounts, transfers, invoices for placing the received check in an account and initialization of the unit for parameter input and execution of transfers of the client application are performed.

9. The method according to claim 8, wherein the input and verification of the account and its empowering with the rights corresponding to the account category shall be performed upon initialization of the client unit for authorization.

10. The method according to claim 6, wherein the server application of the module for information update will perform the displaying, at least, of the accounting information in the user interface, including information about all of the participant's accounts: number, description of the account, active balance in the account, number of the electronic check

referenced to the account, data on the bank associated with the account, etc., after successful completion of the stage of authorization.

11. The method according to claim 6, wherein the input of the transfer parameters and execution of the transfer are performed stage by stage upon initialization of the K5 unit for parameter input, execution of transfers, which is carried out in case of forced selection of the corresponding section in the user interface of the client application; the input of the required initial data for the electronic check transfer is performed, which are pre-set in the system for each category of participants; the transfer is generated on the basis of the invoice received for placing the checks in an account or an application of a certain type.

12. The method according to claim 6, wherein the input of the transfer parameters includes automatic validation to be performed in the process of parameter input, with simultaneous generation of an error message and its transfer to the participant's client application and computer device.

13. The method according to claim 6, comprising the automatic calculation of the commission to be collected for the transfer in the process of reception of the data by the application on the amount of transfer, which is performed, by means of software and hardware facilities, by the server application with simultaneous generation of a message and its transmission to the client application and client computer device.

14. The method according to claim 13, wherein the calculation of commission is performed by the module on the basis of local data of the application to be stored in the random-access memory and/or downloaded, for example, at the stage of reception of the account data and/or on the basis of the rate of commission pre-set in the memory of the server computer device. All with the possibility of its update and transfer from the server by means of a separate request from the client application, generating a report on the amount of commission to be collected for the transfer and the amount to be written off (or amount receivable, depending upon the parameter being completed), which is to be transferred to the K5 unit of the client application.

15. The method according to claim 6, additionally comprising a stage for the preliminary verification of transfer parameters, in the course of which an electronic request is generated by means of the K5 unit for data verification and transferred to the S4 server unit for verification of the parameters of electronic check transfers; the S4 unit shall determine in the course of verifications whether the execution of transfer with the

parameters specified is accessible, and in cases where a positive response is received, the execution of the S2 server unit is triggered, in the course of which the necessary verifications of the sender's authenticity, at least verification of the request EHS and the transfer recipient, at least verification of the accessibility of the recipient account, and the data on the electronic check available in the transfer sender's account will be retrieved from the DB, the nominal value of the check will be compared to the amount to be written off and other verifications will be performed, as provided by the peculiarities of the specific implementation of the System.

16. The method according to claim 15, wherein the blocking of a separate amount in the account shall be additionally performed, with comparison of the amount to be written off against the amount of accessible active balance.

17. The method according to claim 15, wherein the stage of the registration request for the transfer and its recording in the system DB performs calculations and fixed the amount of commission.

18. The method according to claim 15, wherein the stage of the registration request for the transfer additionally comprising the initialization of the S9 unit of the generation and storage of digital documentation with provision of the possibility of generating an electronic document in a format suitable for printing on paper, which contains all of the details of the application for electronic check transfer and has been confirmed with the Participant's EHS by means of the client unit of electronic signature of digital documentation (K17).

19. The method according to claim 18, wherein the electronic document in a format suitable for its printing on paper is transferred to the DB on the server and stored along with the EHS and other information in the application database.

20. The method according to claim 6, wherein the unit S5 for the registration and execution of electronic check transfers, at runtime of the transfer, receives data from the System database on the electronic check in the transfer sender's account and the amount of commission and performs a comparison of the nominal value of the balance check in the sender's account with the amount of transfer; in case of the coincidence of the value being compared, the transfer of the electronic check is carried out from the sender's account to the recipient's account.

21. The method according to claim 20, wherein the the S5 unit, for transfer of the check, initiates the execution of the server's management unit S7 of electronic check; in doing so, the data will be transferred to the input at least on the number of the electronic check, number of the transfer sender's account, number of the transfer recipient account, and in case of the confirmation of execution of the transfer, the S7 unit will implement changes in the information in the DB; at that, information about the check in the transfer sender's account will be deleted, the data on the number of the new balance check will be introduced into the recipient's account and the information about the check holder will be changed; at the same time, the transfer of information to the S8 unit and registration of electronic check transactions in the Register by the S8 unit will be performed and then the information about successful finalization of the transfer will be generated and transmitted to the S7 unit.

22. The method according to claim 20, wherein the electronic check will first be transferred to the Operator and the Operator will transmit the check to the transfer recipient.

23 The method of Claim 20, wherein the nominal value of the check will not be fully transmitted to the recipient, in case of a request for transfer, and the S5 unit will trigger the procedure for electronic check exchange of the S7 unit for electronic check management; in doing so, the S5 unit will transfer the following data to the input of this procedure: number of the electronic check, whose nominal value is equal to the balance in the sender's account, nominal values of the electronic checks into which the exchange shall be performed, equal to the amount of transfer and the amount of commission to be collected for the transfer..

24. The method according to claim 23, wherein the S7 unit will transmit the sender's electronic check to the System Operator, in case of electronic check exchange; in doing so, the Operator will submit the electronic check received for payment to the paying bank; at that, the submission of electronic check for payment is performed by execution of the procedure for submission of the check for payment of the S7 unit for electronic check management, to whose input at least the following data are transmitted: number of the electronic check, information about the bank, number of the account from which the check is being submitted, and after successful execution of the procedure for check submission for payment, execution of the procedure for check writing-off will be performed by means of triggering the S7 unit for electronic check management, to whose input the electronic

check number will be transmitted, the data of the paid check will be changed and the registration and recording of the electronic check transaction in the register will be carried out by means of initialization of the S8 unit and the transaction involving electronic check write-off will be finalized upon the transmission of a control signal to the S7 unit.

25. The method according to claim 24, wherein the S7 unit, within the framework of the procedure for electronic check exchange, will sequentially trigger execution of the S11 unit for the issue of electronic checks for each of the checks specified; in doing so, the data on details of the new check will be transmitted to the input of this unit, which at least includes the following: nominal value, currency of the check, data on the paying bank, with provision of the possibility of acquiring new checks by the Operator from the Issuer for the amount of transfer and/or checks for the amount of commission and/or checks for the amount of balance of the required nominal values.

26. The method according to claim 25, wherein the necessary data will be retrieved from the system DB for specification of the check details under execution of the S11 unit, and the execution of the S12 unit for electronic check signature will be triggered and a record on the new electronic check in the DB will be created.

27. The method according to claim 24, wherein the S11 unit, under implementation of the electronic check issue, will trigger execution of the procedure for recording the check issue transaction of the S8 unit for registration of the electronic check transactions in the Register, and after successful recording in the register, the operation of the S11 unit for electronic check issue will be finalized for the check and the issued checks will be transmitted to the Operator in accordance with the procedure for electronic check transfer of the S7 unit for electronic check management; in doing so, the Operator will transfer the balance check to the transfer sender.

28. The method according to claim 24, wherein the Operator, within the framework of the procedure for execution of the transaction of the S5 unit, will perform the transmission of a check for the amount of transfer to the recipient's account; in doing so, the S5 unit will retrieve information about the balance in the transfer recipient's account and about the account settings; in doing so, if a balance is available in the check recipient's account and/or a bank is specified in the account parameters that is different from the paying bank according to the transfer check, the S5 unit will trigger the procedure for the exchange and/or combination of electronic checks of the S7 unit for electronic check management; in

doing so, the electronic checks from the recipient's account will be transferred to the System Operator's account, and the Operator will submit the electronic checks (check) received for payment to the bank specified as the payer according to the "balance check" of the transfer recipient, or to the Bank specified in the account settings; in cases where the balance is missing and for the electronic check submitted for payment to the paying bank, execution of the procedure for check write-off of the S7 unit for electronic check management is triggered, upon whose termination the Operator will acquire a new check from the Issuer, whose nominal value will be the sum of the nominal values of the checks submitted for exchange, and/or it equal to the nominal value of the check submitted for exchange into a check of another paying bank; the S7 unit, within the framework of the procedure for electronic check exchange (combination), will trigger the execution of the S11 unit for the issue of electronic checks and determine that the payer according to the new check will be the bank that has performed payment of the checks submitted for exchange; the issuer will transfer the check issued to the System Operator, and the Operator will transfer the new check to the transfer recipient, and the procedure for electronic check exchange and/or combination will be finalized after successful implementation of the aforementioned actions.

29. The method according to any of claims 24, 25, 26, 27 or 28, wherein the execution of the S9 unit for the generation and storage of digital documentation will be triggered and generate the required digital reporting documentation, in implementing the procedure for execution of the transaction of the S5 unit for the registration and execution of electronic check transfers, with provision of the possibility of its signing with the Participants' EHS and subsequent printout.

30. The method according to claim 29, wherein the digital images of the following documents will be generated, under execution of the S9 unit: Certificate of acceptance of the electronic check, Certificate of services provided, Proforma invoice, which shall be transferred to the input of the K17 unit for the electronic signature of digital documentation, with provision of the possibility of signature with the EHS of the corresponding parties.

31. The method according to claim 30, wherein the S5 unit, after successful implementation of the transfer and generation of the required documentation, will initiate execution of the S10 unit for sending online notices; information about the transfer recipient, type of the message being sent will be transmitted to the input of the S10 unit; in doing so, the S10 unit will trigger execution of the K3 client unit for the updating and synchronization

of client and server application data; at the same time, the S5 unit will transfer information to the K5 unit, which saves information about transfer sender's payments.

32. A method for issuing electronic checks in the electronic check settlement system containing a server computer device for data processing and storage, an information display device and the server application device comprising it, and client computer processing devices containing an information display device and client applications connected over wireless and/or Internet communication channels, comprising at least the obligatory stages of a request by the issuer for issuing a check, the bank's verification of the receipt of monetary funds in the issuer's account, which serve as security for the given check, for conformity with the request parameters and the bank's confirmation of the electronic check issue, with provision of the possibility of the generation of legally-valid documents and the reflection of transactions in the check register to be generated and stored on the system server.

33. The method according to claim 32, comprising the launch of the client application on the client computer device by the user with the Issuer's account and execution of the customer's authorization in the system; in doing so, the K2 client units for authorization in the System and the K3 unit for the updating and synchronization of client and server application data will be sequentially initialized in the course of the input of account data, which transfer the account data over the communication channels to the corresponding S1 server units for authorization and the S2 unit for data synchronization where the account data are compared against the DB server data, and upon termination of the execution of the processing of account data, the control signal will be transferred to the K2 and K3 units for blocking or the permission of access of the account entry to the system applications and perform an update of the data as of the date of the account entry, with provision of the possibility of displaying the result on the client information display device; if the authorization is confirmed, the K3 unit will transfer the account data to the K11 unit for data input and sending requests for the issue of electronic checks, which generates a client application with the interface corresponding to the check issue transaction and the data of the request for electronic check issue will be entered, on which basis the K11 unit will generate a request for check issue in the form of an electronic document certified with the Issuer's EHS and transfer the request to the S6 server unit for registration of applications to place the checks in an account, which will execute the procedure for verification of the

parameters of the check issue request, generate a request for authorization and initialize execution of the S2 server unit, in the course of which the necessary verifications will be performed for both sender's accounts (including verification of the request EHS) and the request recipient's accounts, and in case of the positive result of the verification of all data, the S2 unit will generate a confirmation message about passing the verification to the S6 unit and the request will be registered on the server, and the request data will be recorded in the DB; in doing so, a message will be sent to the paying bank for the check being issued by means of the S10 unit for sending online notices about the availability of a new request to the bank's K3 unit, and the bank's K3 unit, by sending a request with the Bank's identification data to S3, will perform downloading of the data of the request for the electronic check issue after confirmation of the Bank authorization in the system to be performed by the S2 and S3 units on the basis of the request, and will transfer data on the request to the K13 Bank's client unit for processing the requests received for the issue of electronic checks, with provision of the output of data in the user interface about the request for check issue and implementation of the selection to accept or decline the request; in doing so, the Bank's K13 unit will verify the availability of payment received from the payer specified in the request for the issue of an electronic check for the check being issued and collate the data in the Issuer's request with the data from the statement from the Issuer's account received from S3, and in cases where monetary funds are received in the Issuer's account for acquisition of the check, the bank's K13 unit will generate electronic confirmation of the request and transfer it to the S13 server unit for the processing and execution of applications, which will retrieve the data from the DB on the request for check issue being confirmed, perform the necessary verifications of the Bank's account and, upon their successful finalization, transfer the check issue data to the S11 unit for the issue of electronic checks, which will perform initialization of the S5 unit for the registration and execution of electronic check transfers, which will generate the electronic check and implement the transfer of the check issued from the Issuer's account to the check Buyer's account, with generation of a report on execution of the transaction and its forwarding to the S11 unit, with its subsequent transfer to S10 via S13 with the possibility of generation of a message on the transaction executed to the Bank's and Issuer's K3 units; in doing so, the S13 unit will transfer the check issue data to the Bank's K13 unit, which will record the updated state of the processed check issue request, and the S10 unit will update the issuer's

account data, with provision of the possibility of the simultaneous output of the updated state of the request and the information about automatic transfer to the buyer of the check to the issuer's information display device.

34. The method according to claim 33, wherein the parameters of the data for the request for issue of the electronic check include at least the data on the check details, which include the following: nominal value, currency of the check, data on the paying bank.

35. A method of payment of electronic checks in the electronic check settlement system containing a server computer device for data processing and storage, an information display device and the server application device comprising it, client computer processing devices containing an information display device and client applications connected over wireless and/or Internet communication channels, comprising the launch of the client application, in the course of which the K2 client unit for authorization in the system will be initialized, after whose execution the K3 unit will be launched for the updating and synchronization of client and server application data, in case of whose successful execution the initialization of the of the K8 unit for data input, the sending of an application for electronic check payment and input of the required initial data for generation of the application for payment of the electronic check will be performed; in doing so, the K8 unit will determine the bank acting as the payer for the Participant's electronic check on the basis of the input data, generate an application for payment of the electronic check in the form of an electronic document certified with the user's EHS and transfer the application to the S6 server unit for the registration of applications, requests, invoices for placing checks in an account, as carried out through the S2 unit, and perform the verification of data by comparing them with the data to be stored in the system DB, and in case of the positive result of verification, the application will be registered on the server, and the records will be introduced into the DB; at that, a message will be sent to the Recipient (paying bank) through the S10 unit for sending online notices on the availability of a new application; the Bank, by means of interaction with the S3 unit, will download the application from the server for payment of the electronic check; in doing so, the S3 server unit for data update, synchronization of client and server application DBs will perform verification of the fact that the request download has been carried out by the recipient with the "Bank" status specified in the request; after successful reception of the request, the triggering of the K14 unit of the Bank's client application will be performed for processing the applications received for payment of electronic checks, which will generate and

output the data in the user interface on the application for payment of the electronic check and provide the Bank with the option of declining or confirming the application; the Bank will verify the correctness of Application parameters, availability of the necessary amount of funds in the issuer's settlement account, and in case of successful verification, it will perform the generation, via the System, of the invoice for placing checks in an account by means of execution of the K6 unit of the client application for data input, sending invoices for placing checks in an account, which will generate the invoice for placing checks in an account in the form of an electronic document certified with the user's EHS and transfer the invoice to the S6 server unit for the registration of applications, requests, invoices for placing checks in an account; the S6 unit will execute the procedure for verification of the parameters of the invoice for placing checks in an account by means of the S2 server unit, perform registration of the invoice on the server in the system DB in case of the successful performance of verifications, and generate a message to the Recipient by means of the S10 unit for sending online notices about the availability of a new request; in cases where a system message is received, the K14 unit of the Bank's client application for the processing of applications received for the payment of electronic checks will perform updating of the state of application; the participant, having received the aforementioned invoice for placing checks in an account, will carry out transfer to the bank to the account in the System specified; in doing so, in cases where the transfer is received by means of the K9 unit for the processing of received electronic check transfers, the verification of payment details and other transfer parameters will be carried out, comparison with the parameters of the application confirmed for payment of the check to be stored in the DB and the procedure for verification of the received electronic check will be initiated; following receipt of the Notice of check verification from the Issuer and change in the state of Request for verification in the system to "confirmed," the bank will perform payment according to the check by remitting the respective monetary funds to the Participant's settlement account and carry out write-off of the check.

36. The method according to claim 35, wherein the Bank will select the "Decline the application" option and specify the basis for refusal, in cases where the Application cannot be satisfied and/or the check bearer has not passed the necessary verifications; in doing so, the K14 unit for the processing of applications received for the payment of electronic checks will send a command to the S13 server unit for the processing and execution of applications, requests and trigger the procedure for payment refusal of the S13 unit, in the course of

execution of this procedure, the data on the application being declined will be retrieved from the DB, the necessary verifications will be carried out and the triggering of the S9 unit will be performed for the generation of digital documentation, with provision of the possibility of generation of the Notice of refusal of check payment, and the electronic signature of digital documentation with the Bank's EHS will be implemented by means of execution of the K17 unit; in doing so, the S13 unit will notify the customer about the change in the state of the application sent by the customer.

37. The method according to any of claims 35 or 36, wherein the electronic check write-off process will be performed upon selection of the corresponding option in the user interface of the Bank's application; in doing so, the execution of the K18 unit will be triggered for writing off electronic checks, which, on the basis of the confirmed request for verification, will generate an electronic request to write off the electronic check containing the number of the request for verification, certify it with the Bank's EHS and send it to the S14 server unit for the write-off of electronic checks, which, after execution of the verification stage, in the course of which the data will be retrieved from the DB on the confirmed request for verification of the check, triggering of the K2 unit will be performed for verification of the Bank's account, request EHS as well as verification of the electronic check to be written off, carry out write-off of the check and the corresponding changes will be introduced into the DB and, by means of the S14 unit, the record and registration of the write-off transaction in the register will be carried out, after which the S14 unit will perform an update of the state of the application for payment of the check, request for verification (into "check payment has been performed") and the corresponding notices will be sent to the System participants by means of the S10 unit.

38. A method for verification of electronic checks in the electronic check settlement system containing a server computer device for data processing and storage, an information display device and the server application device comprising it, and client computer processing devices containing an information display device and client applications connected over wireless and/or Internet communication channels, distinct in that it will be launched in cases where the Bank has received the transfer of the electronic check to the specialized account with indication of the data, in the purpose of payment, on the application for payment of the check; in doing so, the Request for verification of the electronic check submitted for payment will be generated; at that, the execution of the K15 unit will be

initiated for data input, sending requests for the verification of electronic checks; the K15 unit will provide the bank with the possibility of automatic completion of the request parameters on the basis of the received transfer; in doing so, the K15 unit will certify the request in the form of an electronic document with the bank's EHS and send it to the S6 server unit for the registration of applications, requests, invoices for placing checks in an account, which will execute the procedure for verification of the parameters of the request for verification of the electronic check, and in case of successful fulfilment of all verifications, it will determine the Issuer's registration number and save the request to the server in the system DB; at that, a message will be sent to the recipient (Issuer) by means of the S10 unit for sending online notices on the availability of a new request; the Issuer, by means of interaction with the S3 unit, will download the request for verification of the electronic check from the server; in doing so, the S3 server unit for data involving the updating, synchronization of client and server application DBs will perform verification of the fact that the request download is being performed by the recipient with the "Issuer" status indicated in the request, and after successful reception of the request, the triggering of the K12 unit of the Issuer's client application will be carried out for the processing of requests received for the verification of electronic checks, which will output the data in the user interface on the request for the verification of an electronic check and provide the Issuer with the option to decline or confirm the request; in cases where all verifications have been performed successfully, the Issuer shall confirm the Request for verification of the check; at that, the K12 unit for the processing of applications received for the payment of electronic checks will send the request to the S13 server unit for the processing and execution of applications, requests and trigger the procedure for confirmation of the request for verification of the check of the S13 unit, in the course of whose execution, the data on the request being confirmed will be retrieved from the DB, the necessary verifications will be carried out and the triggering of the S9 unit will be performed for the generation of digital documentation, with provision of the possibility of generation of the Notice of the verification of an electronic check; at that, the document, by means of execution of the K17 unit for the electronic signature of digital documentation, will be signed with the Issuer's EHS. The S13 unit will notify the Bank about the change in the state of the application sent by the Issuer.

ABSTRACT

The invention relates to the sphere of information technologies, in particular, to electronic systems and monetary-fund circulation methods and can be used for solving problems of mutual settlements between participants of the electronic payment system in real-time mode. In doing so, the analogue of monetary funds in the invention presented are electronic bank bearer checks complying with bank regulations and the requirements of applicable legislation. The client application units are rendered as grouped into modules by categories corresponding to the user status determined by the unit of authorization of the client and server applications, with provision of the possibility of pre-setting a group of check circulation parameters for each category. The issue of checks is accompanied by the creation of legally-valid documents and reflection of transactions in the check register.