

Corporate Cash Flow Transformation and Payment Space Digitalisation in the Eurasian Economic Union

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Journal of Corporate Finance Research, Vol. 14, No. 3, pp. 90-102 (2020)

DOI: <https://doi.org/10.17323/j.jcfr.2073-0438.14.3.2020.90-102>

Received 13 April 2020 | **Peer-reviewed** 15 May 2020 | **Accepted** 25 May 2020

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Abstract

Modern digital systems in the EEU do not meet the requirements for official methods of transferring funds, and are not appropriate for use in the field of corporate finance. As such, we propose the development of a modified digital system combining the principles and capabilities of traditional and innovative systems based on distributed registry technology. This should promote integration of national payment systems into the financial sphere under conditions of sanction burden, and low trust in the virtual world.

First, we outline the features of corporate cash flows through digital financial assets transfer in a national digital system, and cross-border settlements within a common digital payment space. Next, we describe the possible roles of corporate structures and individuals in payment systems within an EEU common digital payment space. We combine methods of formal logic, historical and comparative analysis, modeling, and graphical interpretation. The study of the digital financial space was carried out on a selection of materials from the Russian Federation, Armenia, Belarus, Kazakhstan, and the Kyrgyz Republic.

Our results illustrate the practical value of a new digital system in reducing the influence of intermediaries, and of integrating systems with different types of information into a common database. In addition, we indicate how the prevailing international digital transfer system will accelerate, simplify and reduce the cost of cash flow procedures for organisations. By leveling the need for an international digital unit, such a system will play an intermediary role. We identify the necessary conversion operations to achieve this.

The scientific novelty of this study resides in the fact that there is no current analogue for the project proposed herein. As such, we present a large scale and straightforward roadmap for an ambitious and adaptive response to digital development opportunities, social evolution, and financial obstacles.

Keywords: cash flow, corporate finance, distributed register; digital system; digital settlements; digital financial assets

JEL classification: G30, O16, O33

Introduction

Nowadays, society is highly dependent on information financial systems. Their regular failures result in losses of funds, reputational damage, instability in financial flows, decline of trust to organisations and national payment systems, and interstate conflicts. Existing closed settlement and payment systems are based on the principle of centralisation and concentrating “power in the hands of a single person” which impedes the reliability, transparency, and independence of operations as well as countering the dollar spread in circumstances of a global recession, financial crisis, or a generally tight geopolitical and economic environment [1–5]. The available information systems are overloaded by the increasing amounts of data to be processed. As a result, significant financial expenditures are necessary to modify these systems, otherwise they fail to ensure a proper quality of rendered services. At the same time, their autonomous functioning complicates and lengthens the relevant cross-functional interaction procedures. Corporate entities increasingly need to develop automation of financial procedures and transform their corporate interactions, which in the long run facilitates reduction of time, labour, financial costs, intermediation of economic entities, the number of repetitive (double) operations, and the paper and electronic workflows. The solution which addresses the requirements imposed by the fourth industrial revolution regarding storage, processing, and transfer of information consists in innovative distributed registry technology (e.g. blockchain), which entered the financial field at lightning speed and is still gaining popularity [6–13]. In previously published papers dedicated to issues of common digital space creation, the authors identified comparative characteristics of the traditional and innovative approaches to arranging settlement and payment systems. These were accompanied by descriptions of operational principles and advantages and disadvantages of each of them¹, a stipulation that it is reasonable to integrate innovative technology into the settlement and payment space (which consists of a positive technological, economic and social effect²), and compared versions of the common digital space model, justifying the most reasonable choice³. Apparently, it is exactly the capability of digital settlements to satisfy the corporations’ needs in the automation of financial procedures which made them popular against the background of no lawful status and legal and regulatory framework. Digital systems did not find legal use either in the national payment system or in the international payment space [14–16]. Different attitudes to the digital financial system

of the Eurasian Economic Union members slows down the process of establishment of the common digital space. In this context, it is reasonable to create a common digital settlement and payment system, and to establish an EAEU Interstate Bank (EAEU IB) which will initiate and drive preparation and unification of information exchange formats, creating a new structural architecture and arranging of an extensive implementation of innovative technology at the international and national level.

Model of the EAEU Common Digital Payment Space

Currently, the majority of central banks of the countries which jointly account for 75% of the global population and 90% of economic industry acknowledged the potential of digital settlements which are gaining popularity [17]. The Bank of Russia is no exception. It made a public announcement of the consultation paper “A Digital Ruble” [18], which was the first stage of digitalisation of the settlement and payment field. This document defines controversial issues related to the integration of digital assets into the payment system. The author’s position on these issues is outlined in this paper.

Payment space digitalisation requires a unification of different functionalities in order to achieve a transparent ‘interdepartmental’ interaction and respond to current global challenges. Therefore it is important to note that the digital system modifications we propose are aimed at providing an opportunity for use by corporations and organisations which cash flows are mainly serviced by cashless transfers. In particular, these systems which clearly indicate the roles of legal entities and stages of cash transfer require the attention of corporations and organisations. While credit organisations and government authorities are still considering and investigating the possibility of implementing digital systems, organisations already use them for mutual settlements’ procedures, adjusting the technology innovation to requirements of the Russian legislation (S7 Airlines is a specific example).

The development and implementation of the model of the common digital payment space involves the following stages:

- formation of the legislative framework for digital financial assets turnover, which unambiguously determines the concept of their integration and further development;

¹ *Apergis N., Kunitsyna N., Dyudikova E. The Role of Electronic Money in the Payment System: Evidence from Middle-Income Economies // International Journal of Emerging Trends in Engineering Research. 2020. Vol. 8. No 1. Pp. 67–78.*

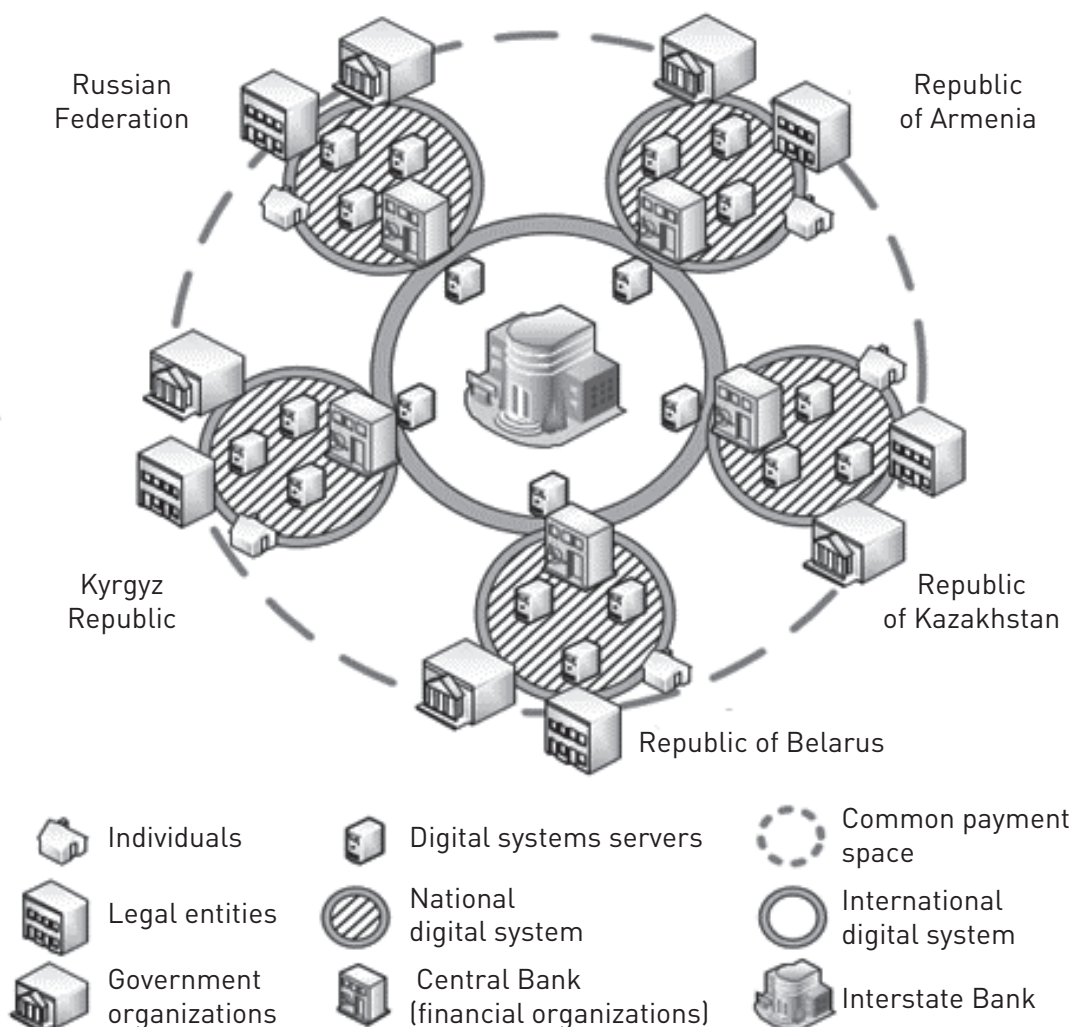
² *Kunitsyna N., Dyudikova E. Prospects of Implementation of Cryptocurrency in the Russian National Payment System // Current Problems of Operation of the Regional Financial Mechanism: Materials of All-Russian Research-to-Practice Conference. Makhachkala: Dagestan State University, 2016. pp. 215–221; Dyudikova E. Risks as an Integral Part of Applying Centralized and Decentralized Approaches to Arrangement of Electronic Money Systems // Contemporary Trends in Economics and Management: New Insight: Collection of papers of the XLII International Research-to-Practice Conference. Novosibirsk: publishing house Center of Scientific Cooperation Development, 2016.*

³ *Dyudikova E. Implementation of Cryptocurrency into the Russian National Payment System // Economics and Management: Problems, Solutions. 2016. No. 9. Vol. 1 (57). Pp. 185–190; Dyudikova E. Models of Digital Technology Integration into the International Payment Space // St. Petersburg State Polytechnical University Journal. Economics. 2020. Vol. 13. No. 3. Pp. 187–200.*

- defining requirements to a legitimate digital settlement and payment system;
- defining the approach to creating a common digital payment space;
- choosing the model of the national digital settlement and payment system;
- calculation of financial and economic indicators of the national digital settlement and payment system;
- development of organisational and methodological recommendations for interaction between subjects of the national digital settlement and payment system;
- establishment of the national digital settlement and payment system in accordance with the chosen model and its integration into the payment space;
- transformation of the national digital settlement and payment system into a common comprehensive multifunction digital platform;
- calculation of financial and economic indicators of the digital system of international interaction;
- development of organisational and methodic recommendations for interaction of subjects of the digital system of international interaction;
- establishment of the digital system of international interaction in accordance with the chosen approach and model with its further integration into the payment space.

In constructing the model of the common digital payment space of the EAEU, we presume that each member state will establish a common national digital settlement and payment system. The interaction between the countries when making settlements should be performed through the common digital payment space. The EAEU IB will be its operator, which will devise rules for international settlements, and become the supervision and control authority for cross-border settlements (Figure 1).

Figure 1. Structural diagram of the common digital payment space in the EAEU



According to the presented model, the national digital systems and the international digital system are autonomous and interact on the basis of the sidechain technology within the common digital space [19]. National digital systems operate in accordance with the relevant national legislation, and are available for their departmental corporations and organisations in the operations monitoring mode. The model serves to automate the taxation and settlements functions. In its turn, the EAEU Interstate Bank can monitor all financial operations in the international digital system.

Making a distinction between the role of users (corporate entities and individuals) and national and international settlement systems, we defined their functionality and identified cash flow directions. Various proposed modifications of interactions between settlement participants are characterised in the model below. We would like to emphasise that the presented components are considered not as a part of the digital system in the context of its architecture, but from the perspective of modification of operating cryptocurrency systems which allow to eliminate their drawbacks to make them legitimately applicable.

User Roles in the National Digital System

Depending on the user's role in the digital system, users are divided into individuals and legal entities. Various functions and capabilities will be available for them. Individuals performing settlement and payment operations in the system personally, on behalf of third parties, or as an organisation's representative, may be the ultimate users of digital systems. Each of them registers an account in the digital system which allows to go through an identification and authorisation process using a public and private key to enter the personal account. A user with an account can transfer funds through the system, request information on other users, get access to private and public information about other users in the system, and sign smart contracts (SC). Each account is mandatorily inextricably connected with the object (an individual), and if necessary, has additional connections with other objects (e.g. individuals, third parties, corporations, organisations, and government authorities).

The personal account of an individual user contains his/her private data, information on all issued documents, an electronic wallet, and states the resident/non-resident status. This information is placed and stored in the private data register. If necessary, additional entries may be entered in it. Information may be used by means of interdepartmental interactions in order to automate taxation procedures, the granting of social payments, etc. Individuals may make a transfer of digital financial assets (DFAs) between users of the national digital system. As such, the digital system may limit the amount of a transaction, or number and frequency of transfers within a certain period.

Users' accounts are unique and belong to specific individuals. Depending on the roles available to the user, operations may be performed by an individual on his/her behalf or on behalf of a legal entity. Access to management and performance of functions on behalf of an organisation is granted through the role of an officer of such organisation when the organisation is established, or when such person is appointed to his/her position. All information on a legal entity is placed and stored in the legal entities register and is available for interdepartmental interaction.

Financial organisations are granted additional functions such as the routing of financial information between users, rendering financial services, and the recharging and lessening of the balance of users' e-wallets by means of cash lodgments and transfer of funds performed with use of other settlement and payment systems. It should be emphasised that apart from the Bank of Russia, financial organisations cannot issue DFAs in the national digital system. The Bank of Russia is authorised to make the rules of settlement operations.

It is supposed that information in the national digital system is entered by government administrators while they perform their operations. Thus, for example, original registration and information update for individuals is carried out by civil registry offices and the migration service, for legal entities this is done by the tax authorities etc. Functions of the authorised government establishments also comprises monitoring of international funds transfers. As such, supervisory authorities are able to control all incoming and outgoing DFA flows in the national digital system in order to comply with anti-money laundering legislation.

User Roles in the International Digital System

Unlike the national digital system, where accounts are registered for each user, in the international system accounts may be registered only by the EAEU IB and financial organisations' employees authorised to deal with international operations. In this case, mandatory inextricable connections are established with the object (an individual user) and objects (organisations). In the international digital system only utility functions are available for them (e.g. identification and authorisation using a public and private key; adding and changing the rules and terms of DFA settlements; request of information from the national digital system in order to register accounts). The account of an individual user in the international digital system contains only his/her private data, placed and stored in the private data register.

Information on financial organisations which are cross-border settlement participants is entered in the legal entities register of the international digital system. The international digital system provides for the routing of financial information between users in the international space. It also provides for the exchange of public

information between national digital systems on request of financial organisations regarding the correctness and legitimacy of transaction possibility. The EAEU IB would exclusively perform the function of differentiating access and registration rights' of the end users in the international system.

Digital System Infrastructure Components

We presume that the following objects of the digital platform and its subsystems will be the digital system infrastructure components, inform the digital platform's operation, and arrange the functions necessary for its users: access to the right verification servers, validators, and registration of storage servers. Access to the right verification servers will provide for confirming the possibility of performing operations before they are added to the block on the basis of the rules of access (connection) to the distributed registers of the digital system. Validators will generate transaction blocks and send them to the distributed register after verifying the performed operations for absence of semantic errors and compliance with the terms of transfers (availability of a necessary DFA amount, unblocked status of the account, etc.). Finally, registration of storage servers is intended to add operation entries to the distributed register's structure, such as:

- private data register, intended to store different types of individuals' private information;
- legal entities register, providing storage information on legal entities stated in the Unified State Register of Legal Entities / Unified State Register of Individual Entrepreneurs;
- access rights register, comprising access permissions to the distributed registers' data. The control mechanism of access to the user's personal account provides an opportunity to restore access to the digital system in case of loss of access to the account and to entrust to a third party a complete or partial control on behalf of an individual. Such mechanism confirms the legitimacy of certain operations with data: if entries concerning furnishing of such information have not been cancelled, such an operation is deemed legitimate;
- payment register, which stores information on DFA flows: charging and withdrawal of funds, transmitting between the digital system users (the register comprises smart contracts);
- a register of the data not included in other registers.

The list of registers in the international and national digital systems is similar but limited by the available set of information. Private data comprises information on employees of financial organisations dealing with international operations, and processed corporate data comprises information on financial organisations involved in international operations.

In each EAEU member country the government is responsible for the digital system design and creation expenses. The central bank maintains its operation. At the international level, the capital financial expenditures for implementation of the system are distributed among countries, while the EAEU IB covers operational costs. We propose for the EAEU IB to own 100% of computation capacity (servers). However, in order to ensure the system's territorial independence the servers should be located in EAEU countries pro rata with the estimated amount of operations performed in the international space multiplied by two.

User Logging in the Digital System

The primary account in the national digital system will be the entry made by the central bank of the country, in the international system – that of the EAEU IB. The central bank will establish a department for support of the digital platform whose functions will comprise the registration of accounts (and thus control of access to accounts) of financial and governmental organisations of the country, as well as their first administrators responsible for the registering and the state of accounts of their organisations. Then, on the basis of available data, governmental organisations enter the information into the legal entities and individual registers. Accounts of users of the national digital system, which also provides access to the e-wallet, are registered by financial organisations if there is validated information in the individuals and legal entities registers. If such information is unavailable, requests are sent to corresponding governmental organisations.

It is necessary to establish a department of the EAEU IB for support of the digital platform in the international digital system. Its functions will comprise aggregation of accounts of financial organisations involved in international settlements and the relevant access control.

User Rights and Personal Account Access Control in the Digital System

Depending on their role, users may be assigned different rights. The same user may perform several roles simultaneously (for example, as an individual and an employee). According to the user's role, the system of personal account access control allows for determination of the possibility of certain operations with data and objects of the digital system (Figure 2). When a user is assigned rights, information on the administrator assigning it is indicated. Rights cannot be eliminated from the digital system permanently and tracelessly. In case of change in the rights 'portfolio', a new right is assigned. In order to provide an opportunity to use this function, the objects in the digital system are connected with other objects (for example with a user) via his/her rights portfolio. An account is an object of the digital system, therefore the application of rights

establishes relations between the object of an “account” and a “user”. In case of a locking of the “account” object, rights will emerge which deny access to the previously connected “user” object. In this instance the “user” object and all objects connected with it remain intact, and access to them may be granted through a new account.

We assume that rules of use of the distributed register of access rights should comprise the following:

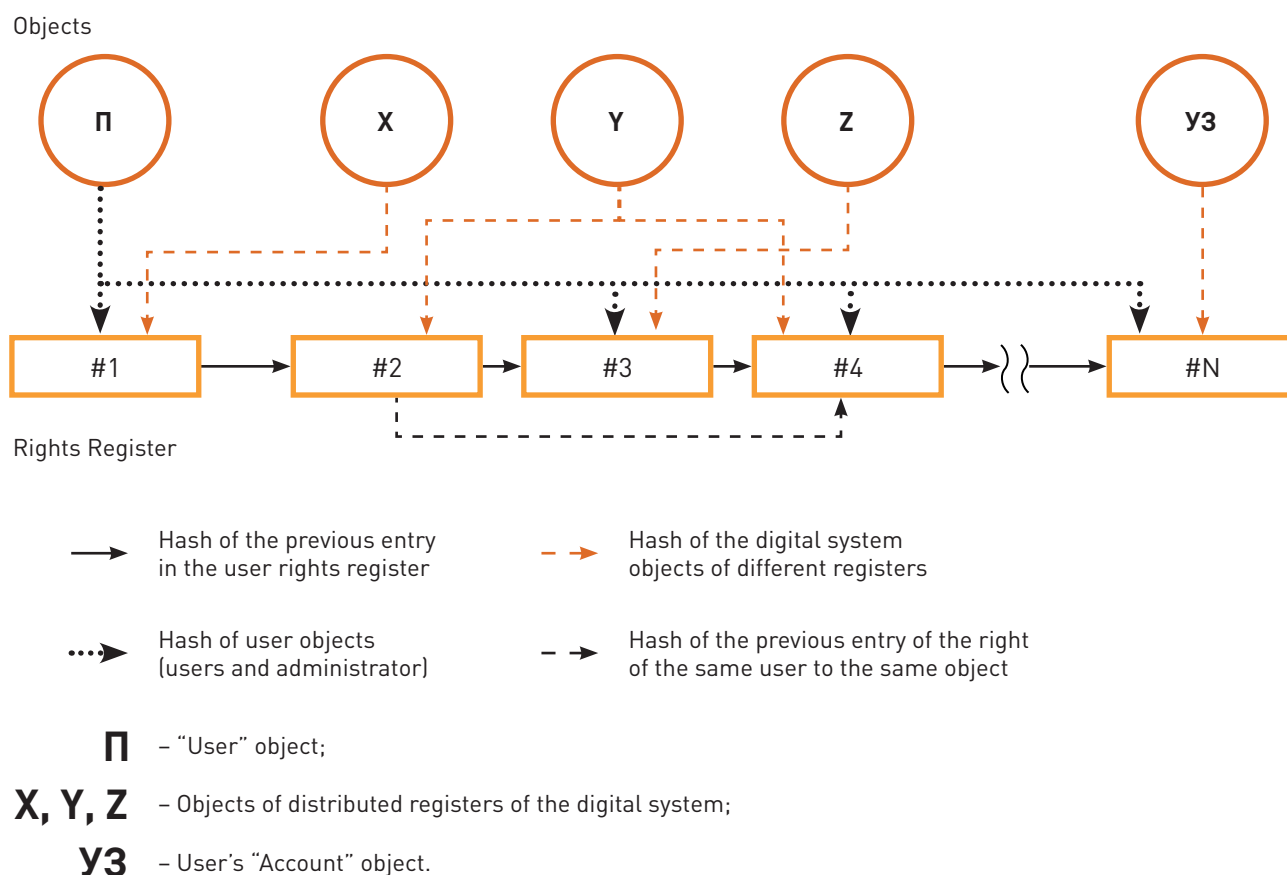
- all rights and their changes are entered into the common register and are added in the order of arrival;
- the right of the same object and user entered into the register later than the previous one prevails;
- all user rights in the system are registered as separate entries indicating a certain right or limitation (prohibition);
- each entry regarding a change of the access right contains a hash (record) of the previous entry of the distributed register, a hash of the previous entry on the right of this user, a hash of the user, and a hash of the administrator which has assigned this right.

Issue and Introduction of Digital Financial Assets

It is supposed that at the national level the issue of DFAs is the responsibility of central banks. DFAs are handed over to financial organisations entitled to operate in this field by transfer from the central bank’s e-wallet to the financial organisation’s e-wallet. The central bank may perform a continuous online control in the national digital system. Besides this, we would like to note that in this model, national DFAs have the status of a legitimate payment instrument and are identical all through their country, thus complementing the cashless money operations.

DFAs are not issued within the international digital system. DFAs introduced into the international digital system by means of the sidechain technology are indicated in e-wallets of financial organisations. In the international system, DFAs are an accounting unit of national digital financial assets. The EAEU IB has an opportunity to perform continuous online control in the international settlement and payment system.

Figure 2. Personal account access control system⁴



⁴ The administrator has the function of creating and changing user accounts, as well as assigning rights to them.

Interaction of the Digital System with Cash and Cashless Money Turnover

There are two ways of introducing money into the national digital system at the ratio of 1:1. One is replenishing e-wallet with cash through a system representative, and the other is a cashless transfer from a bank account in the electronic settlement and payment system to the e-wallet in the digital system.

Money may be withdrawn from the national digital system at the ratio 1:1 only by a transfer from the e-wallet in the digital system to a bank account in the electronic settlement and payment system. After this, encashment is available.

Introduction and withdrawal of traditional payment instruments may be performed only within national digital systems through financial organisations.

In the international digital system, the e-wallet balance may be increased or decreased exclusively by financial organisations participating in international settlements by the use of the sidechain technology. In the international system, financial assets are not kept in the e-wallet. In this case, the e-wallet is intended to register current cross-border transfers because it emerges from the national digital system. In the international segment, the operations are performed automatically.

The exchange rates of national DFAs exchanged for DFAs of the system member states are furnished to the EAEU IB automatically by each central bank of the EAEU at the intervals defined by the charter of the EAEU IB. The EAEU IB consolidates the furnished information and places it into the oracle (an infrastructure algorithm which transfers information from external environment to the digital system [20]) of exchange rates for further use in the digital system. This simplifies the procedure of cross-border settlements due to the automation of direct conversion of national currencies within the international digital system.

In each DFA transfer transaction, its type and description is indicated. The conducted transaction is processed on the basis of this information. Certain requirements may be imposed on transfers in digital systems, for example: maintaining records of the amount of transferred DFA sums, maintaining records of the number of conducted transactions, automatic calculation and transfer of tax payments (at the international level tax payments are not taken into consideration because they are registered and entered in the national digital systems), etc.

Smart Contracts

The innovative technology of digital systems provides an opportunity to enter into smart contracts. These allow for the automation of settlement operations and fulfillment

of contracts, including those concluded with legal entities and governmental organisations [21]. In order to transfer DFAs on the basis of a smart contract it is necessary to indicate the terms and type of the deal, transfer description, amount of tax burden etc.

A smart contract is an object with a unique address in the distributed register, and unique input and output parameters. The contract processing description differs from a traditional agreement (as a rule, concluded in hard copy) by the fact that it is entered in the distributed register and has a certain algorithm of automated processing of its terms. It contains a hash of the previous entry in the distributed register and hashes of its parties. The following two basic requirements should be imposed on smart contracts: first, a strict typing of their parameters and results, and second, a strict format of the contract's description. When a smart contract is fulfilled its parameters are processed automatically, its value is distributed between the parties, and transactions are entered in the distributed register of the digital system. It is advisable to add details of which mechanism has been tested to the system contract forms for frequently performed operations. The result should be explicitly guaranteed. In order to mitigate the risks of development of new smart contracts, sandboxes⁵ are necessary for modelling and assessment of contracts results.

Apart from the sandbox mechanism, a smart contract designer may be used for making new contracts. It draws them up using standard components which makes them less flexible but allows to analyse the interaction between the standard components included in it.

Transfer of Digital Financial Assets in the National Digital System

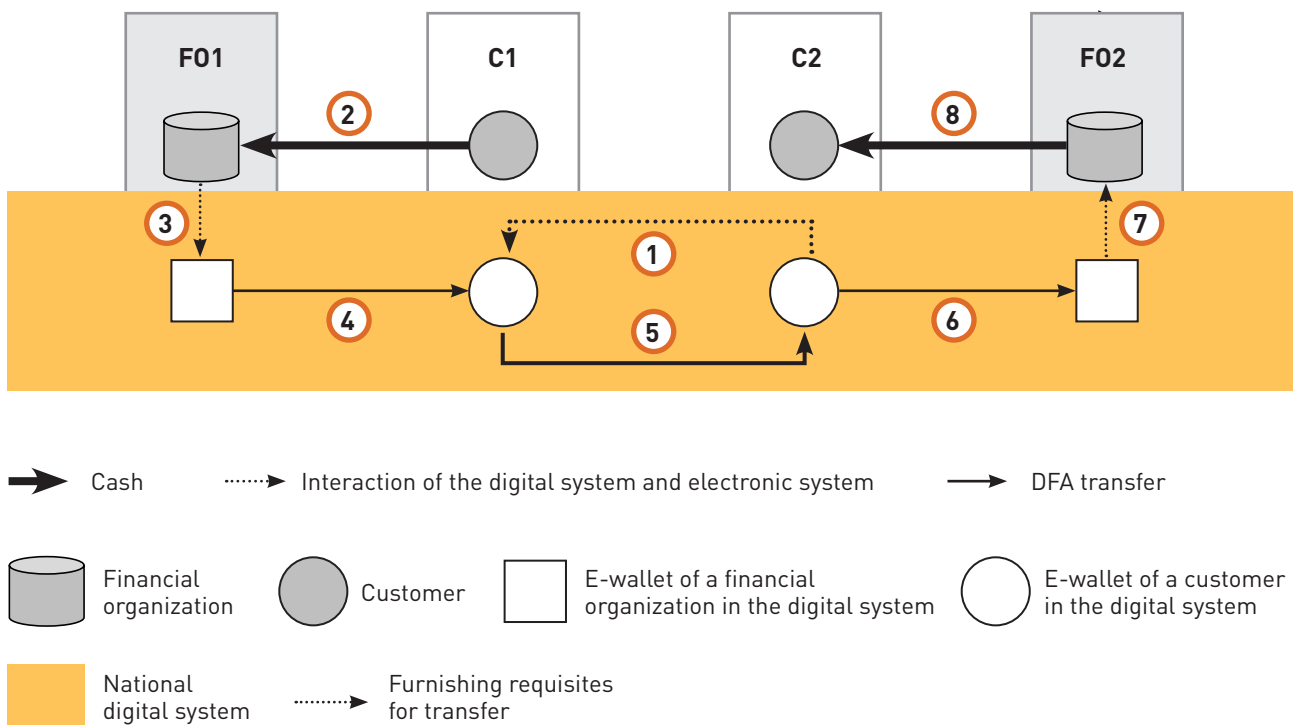
A transmitter and recipient of funds take part in transferring DFAs in the national digital system as well as financial organisations servicing them, where a DFA transmitter and recipient have bank accounts. Figure 3 shows the diagram of funds transfer from Customer 1 (C1) to Customer 2 (C2).

Cross-Border Transfer of DFAs on the basis of a Smart Contract in the International Digital System

In order to make cross-border transfers, e-wallets of the national and international digital system are used. Therefore the EAEU IB takes an indirect part in settlement operations, maintaining the operation of the digital system, establishing rules of its use, providing access to exchange rates in the system, performing control and regulation, and undertaking anti-money laundering and anti-terrorist financing procedures (Figure 4).

⁵ Sandbox is an isolated information environment where a smart contract may get access to described data for reading. However, information and transactions stored in it are not transferred to the actual environment of the digital system.

Figure 3. Scheme for replenishing e-wallets, transferring DFAs, and receiving cash from the e-wallet in the national digital system



I. E-wallet replenishment with cash:

- Customer 2 (C2) informs Customer 1 (C1) of the e-wallet number.
- Customer 1 (C1) receives cash from Financial Organisation 1 (FO1) in order to replenish its e-wallet in the digital system.
- Increase of the e-wallet balance of Financial Organisation 1 (FO1) in the digital system in order to replenish the e-wallet of Customer 1 (C1).
- Transfer of DFA from the e-wallet of Financial Organisation 1 (FO1) to the e-wallet of Customer 1 (C1) in the digital system.

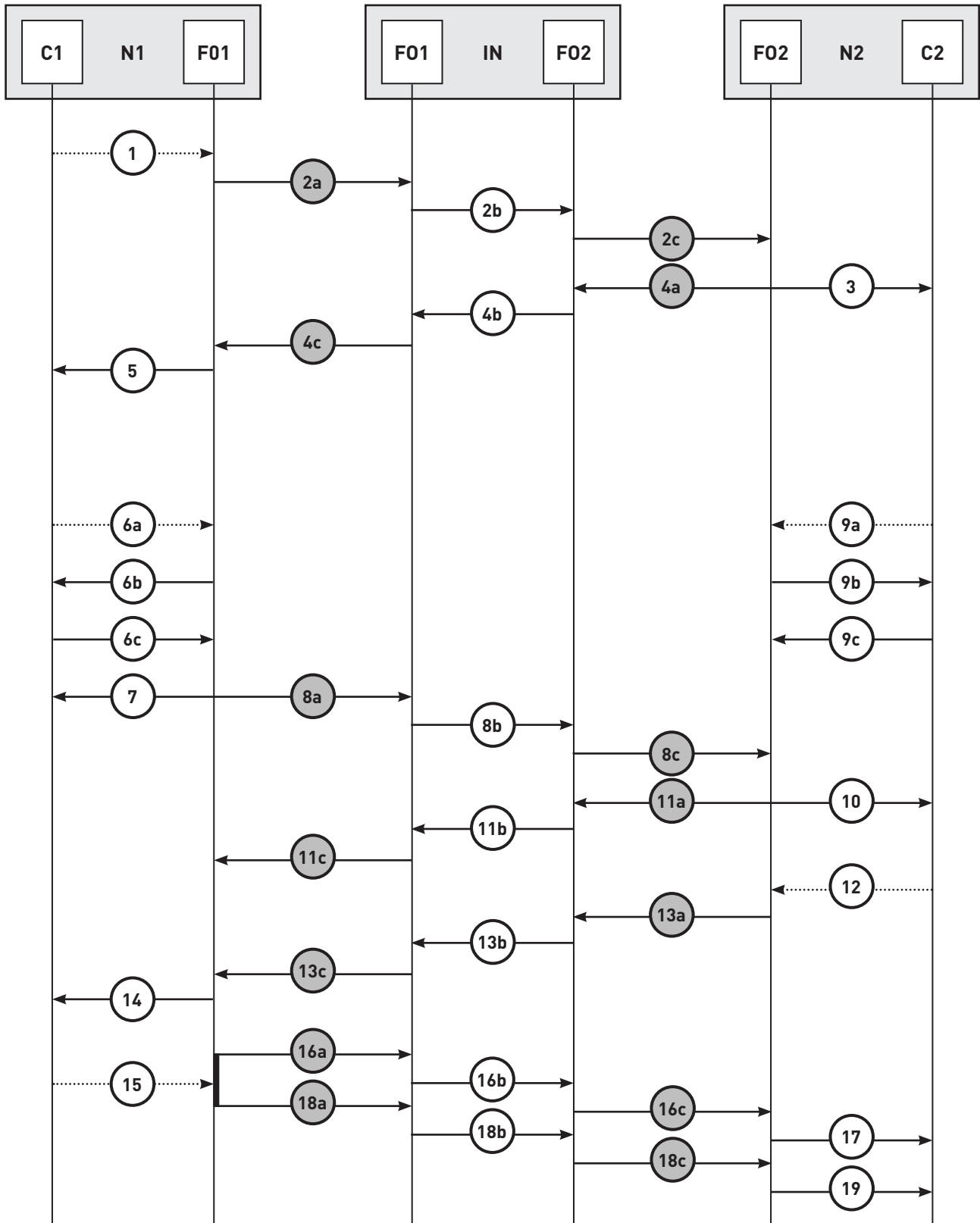
II. Transfer of DFA in the national system from the e-wallet of Customer 1 (C1) to the e-wallet of Customer 2 (C2):

- Customer 1 (C1) transfers on its own DFA from its e-wallet to the e-wallet of Customer 2 (C2) in the digital system.

III. Customer 2 (C2) receives cash from its e-wallet:

- Customer 2 (C2) transfers DFA from its e-wallet to the e-wallet of Financial Organisation 2 (FO2)
- Financial Organisation 2 (FO2) replenishes the bank account of Customer 2 (C2).
- Customer 2 (C2) receives cash from its bank account.

Figure 4. Scheme for cross-border transfer of DFAs with smart contracts in the international digital system



1 Operation number
 11c Operations of synchronization of the national and international systems of financial organizations
N1, N2 National digital systems of various countries **IN** International digital system of the EAEU
> Operations performed by the user manually ← Automated operations

I. Conclusion and fulfillment of a smart contract

1. Customer 1 (C1) creates a smart contract (SC) in the national distributed register assigning unique requisites and sends it to the Financial Organisation (FO1) which services it for sending to Customer 2 (C2).
2. FO1 requests confirmation of correctness of C2's requisites with whom SC has been concluded and sends the address and requisites of SC to the servicing financial organisation (FO2):
 - 2a. transmission of the request through the sidechain technology from the personal account of FO1 in the national digital system to its personal account in the national digital system;
 - 2b. transmission of the request in the international digital system from FO1 to FO2;
 - 2c. transmission of the request through the sidechain technology from the personal account of FO2 in the international digital system to its personal account in the international digital system.
3. FO2 transmits the address and unique requisites of SC in the national digital system.
4. FO2 confirms correctness of requisites of C2:
 - 4a. transmission of the confirmation through the sidechain technology from the personal account of FO2 in the national digital system to its personal account in the international digital system;
 - 4b. transmission of the confirmation in the international digital system from FO2 to FO1 servicing C1 with whom SC is concluded;
 - 4c. transmission of the confirmation through the sidechain technology from the personal account of FO1 in the international digital system to its personal account in the national digital system.
5. FO1 transmits to C1 in the international digital system a confirmation of correctness of requisites of C2.
6. C1 signs the created SC:
 - 6a. C1 requests signing of the created SC in its national digital system;
 - 6b. DFA adequacy in the e-wallet of C1 for freezing the SC value is verified in the national system;
 - 6c. availability of funds in the e-wallet of C1 is confirmed and SC is signed automatically.
7. In the national digital system the SC value is frozen in the e-wallet of C1.
8. FO1 transmits information on freezing the SC value to FO2:
 - 8a. transmission of information through the sidechain technology from the personal account of FO1 in the national digital system to its personal account in the international digital system;
 - 8b. transmission of information in the international digital system from FO1 to FO2;
 - 8c. transmission of information through the sidechain technology from the personal account of FO2 in the international digital system to its personal account in the national digital system.
9. C2 signs the SC created by C1 on the basis of the requisites transmitted to it:
 - 9a. C2 requests signing of the created SC in its national digital system;
 - 9b. DFA adequacy in the e-wallet of C2 is verified in the national system for freezing the SC collateral value;
 - 9c. availability of funds in the e-wallet of C2 is confirmed and SC is signed automatically.
10. The SC collateral value is frozen in the e-wallet of C2 in the national digital system.
11. FO2 transmits information on freezing the SC collateral value to FO1:
 - 11a. transmission of information through the sidechain technology from the personal account of FO2 in the national digital system to its personal account in the international digital system;
 - 11b. transmission of information in the international digital system from FO2 to FO1;
 - 11c. transmission of information through the sidechain technology from the personal account of FO1 in the international digital system to its personal account in the national digital system.
12. Entry of information in the national digital system by C2 on fulfillment of the SC terms for its transmitting to C1.
13. FO2 transmits to FO1 information on fulfillment of SC terms by C2:
 - 13a. transmission of information through the sidechain technology from the personal account of FO2 in the national digital system to its personal account in the international digital system;
 - 13b. transmission of information in the international digital system from FO2 to FO1;
 - 13c. transmission of information through the sidechain technology from the personal account of FO1 in the international digital system to its personal account in the national digital system.
14. FO1 transmits to C1 information on SC fulfillment by C2 in the national digital system.

15. C1 confirms acceptance of the results of SC fulfillment by C2, then the SC value is transferred automatically to the electronic account of FO1 for transfer to C2.

16. Acceptance by C1 of the results of SC fulfillment initiates release of the SC collateral value of C2:

16a. transmission of a communication on release of the SC collateral through the sidechain technology from the personal account of FO1 in the national digital system to its personal account in the international digital system;

16b. transmission of a communication on release of the SC collateral in the international digital system from FO1 to FO2;

16c. transmission of a communication on release of the SC collateral through the sidechain technology from the personal account of FO2 in the international digital system to its personal account in the national digital system.

17. Return of SC collateral to the e-wallet of C2.

II. DFA cross-border transfer

18. DFA transfer as a payment under SC from C1 to C2 whose e-wallets are registered in different national digital systems:

18a. after receipt of the SC value at the electronic account of FO1 as a result of step 15 the SC value is transferred automatically from the e-wallet of FO1 in the national digital system to its e-wallet in the international system;

18b. the SC value is transferred automatically in the international digital system from the e-wallet of FO1 to the e-wallet of FO2 and is converted at the exchange rate established in the system by EAEU IB (when SC is created one of its compulsory terms is to indicate the applied DFA exchange rate at the time of the cross-border transfer);

18c. transfer of the SC value from the e-wallet of FO2 in the international digital system to its e-wallet in the national digital system;

19. Crediting of the received SC value to the e-wallet of C2.

The e-wallet in the international system is replenished from the e-wallet in the national system of the corresponding country by means of the sidechain technology at a ratio of 1:1. When DFA are transferred between the e-wallets of financial organisations of different countries in the international system directly, the national DFA are automatically converted at the established exchange rate. It is advisable to provide additional analytical instruments and detection measures for anti-money laundering and anti-terrorist financing operations at this stage of the technological process of furnishing information on DFA flows. Additionally, it is necessary to stipulate the possibility of DFA freezing or distraintment and notification about the actions performed with dubious assets of financial organisations, central banks, and financial intelligence units of the countries of both the funds transmitter and the recipient.

Conclusion

Globalisation and integration processes face rigorous challenges, which accounts for the preference of corporate entities and population for innovative technologies. Digital systems are an objective necessity under this current reality. As such, they require prompt actions aimed at modification, legitimisation and integration into the existing settlement and payment field in order to satisfy the needs of funds transfer participants. Consequently, this has a significant impact on the competitiveness of organisations, national payment systems, the financial security of countries, the independence of countries in the international context, and the strengthening of cross-border cooperation. In order to provide for financial safety and provide development against the stagnation of the global

economy, as well as to cushion the negative consequences of restrictive measures related to the pandemic and a highly-charged political environment across the globe, EAEU member states have to create a common digital payment space. Implementation of the offered model will enhance the quality of financial systems operating on the basis of the principles of independence, reliability, transparency and imputability, accelerate financial turnover, and simplify cash flows and accounting procedure in the corporate sector.

This research was conducted with financial support from the Russian Foundation for Basic Research within scientific project No. 19-010-00201.

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