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# Using artificial intelligence to optimize intermodal networking of organizational agents within the digital economy

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**Abstract.** The problems of forming a digital economy supersystem have been analyzed by the authors using a key business model of sharing digital assets by organizational agents based on the convergence of telematic, computing and information services with the final output of a complex of managed digital objects to a new quality control based on the M2M principle integration. The integration of standardized network infrastructures allows the transformation of traditional linear-hierarchical chains of management transactions in a network of transactions of digital objects that perform intelligent interaction without human intervention through IP-like connections. The introduction of universal shells of any business process from the processing of primary data to processing in the deep region with the use of advanced multi-agent optimization algorithms of the next [after 3G] generation [based on 4G, 5G, etc.], implemented within the electronic micro-, meso- and macrocontent allows us to ensure the stability of the super system within the optimal values of the activities of controlled digital objects due to the increased possibilities of observation and control.

## 1. Introduction

At present, there is no single methodological basis for the formation of a system-structural approach to improving, based on the digital dominant, the manageability of the Russian economy with the expansion of the spectrum of optimized indicators of individual digital objects and their aggregated groups [1].

## 2. Problem statement

In this regard, there is an urgent need for new business models that shape the conditions and mechanisms for ensuring - this is very important for our country - civilized (including transparent) relations in business and between government and business, which are prospectively structured today as elements digital economy.



### 3. Solution method

A promising orientation towards the introduction of blockchain technology or the Internet of values. The advantage of implementing the proposed by the authors business model of sharing digital assets by organizational agents based on the convergence of telematics, computing and information services for managing complex sets of digital objects within the digital economy is qualitatively broader opportunities for collecting, processing, storing and distributing information.

Thus, the general result of the implementation of the key business model of sharing digital assets by organizational agents for managing complex organizational and economic aggregates of digital objects within the digital economy is improving management efficiency based on the M2M principle (Machine-to-machine) integration [2-4].

It becomes possible to simplify and speed up the planning, tuning, management, optimization and restoration of the parameters of the complex of controlled digital objects as elements of a quasi-unified system [5, 6].

From the point of view of ensuring effective functioning, components that constitute the invariant core of the integration of standardized network infrastructures using cloud principles should be included in the implementation architecture of the convergence of telematics, computing and information services [7-9]. These principles imply distributed and remote processing and storage of data based on the interaction and integration of corporate network environments of various owners (tenants, etc.) of digital assets integrated from separate quasi-autonomous elements in the network (cloud) computing within the framework of the super economy digital economy.

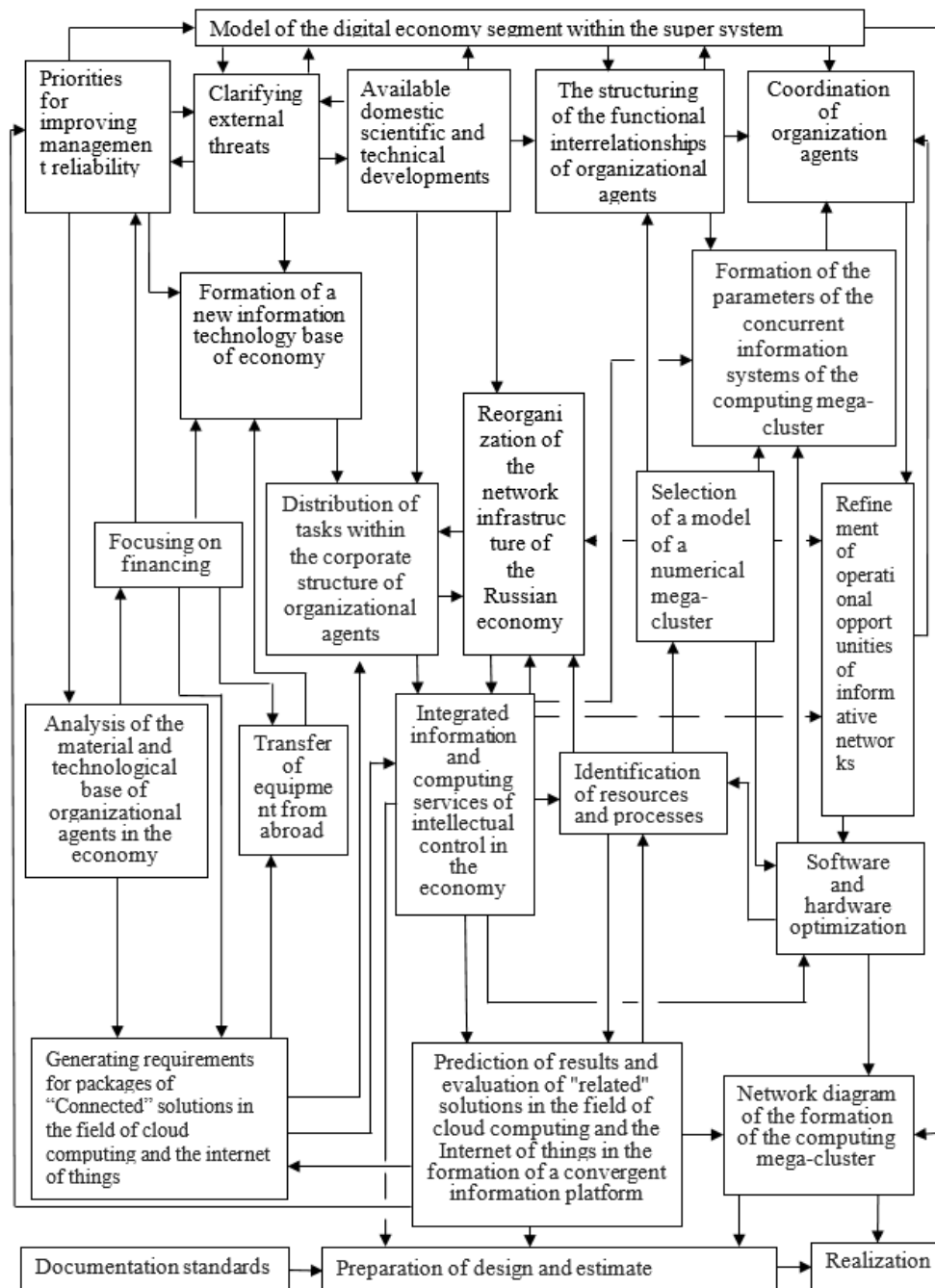
### 4. Discussion

It is expected that the use of elements of artificial intelligence allows the transformation of traditional linear-hierarchical chains of management transactions in a network of transactions of digital objects that perform intelligent interaction without human intervention through IP-like connections fundamentally based on access [to the subject-specific activity] digital assets (electronic content). At the same time, the use of elements of artificial intelligence will make it possible to ensure the stability of the super system within the limits of the permissible parameters of the functioning of digital objects due to an increase in the possibilities of observation and control [10-12].

At the same time, each cloud computing center module can be not only a source and a recipient of information, but also a relay router, and a regional cluster of cloud computing centers becomes a computing node as the basis of a convergent information and computing platform simultaneously forming a network interface driver of other computing nodes, computing mega-cluster (Figure 1).

The integration of information systems of various clusters within a complex of managed digital objects ensures the implementation of a key business model of sharing digital assets by organizational agents while creating opportunities in the economy for all solvent people who want to use programs and computing services from the “clouds” [cloud computing centers] maintenance of M2M modes (Machine-to-machine) integration of a complex of controlled digital objects and support in each of them a standard one a set of information, computing, and other services.

On the basis of monitoring, an exit is made to identify the economic activity of a complex of controlled digital objects that pose heightened risks [13, 14]. Here, the behavior of participants in digital economic interaction allows us to identify the organizational strategy of a complex of managed digital objects that create increased risks and their characteristics (chronotype, participants, role structure, etc.).



**Figure 1.** The functional interrelation of a single information space within the framework of an information platform in the Russian economy.

## 5. Conclusions

Network-centric data integration capabilities in relation to content of distributed databases provide communication between themselves in a network (cloud) of distributed cloud computing centers, starting from processing primary data to processing in the deep region using advanced multi-agent optimization algorithms of the next generation [after 3G] [based on 4G , 5G and further], realized within the framework of electronic micro-, meso- and macro-content according to horizontal, vertical and network principles.

The possibility of forming a time, resource or operational-mode matrix of the studied M2M process (Machine-to-machine) integration within the studied segment of the digital economy is created, which can be based both on a separate event (the result of an economic operation) and on aggregation and comparison heterogeneous economic events and network flows of such operations.

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