ИНФОРМАЦИОННАЯ ЭПОХА

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Трансформация информационных инфраструктур государственных ведомств при построении цифровой экономики

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Аннотация: Проанализированы проблемы формирования суперсистемы цифровой экономики в России с использованием ключевой бизнес-модели совместного использования государственными ведомствами и коммерческими структурами цифровых активов с итоговым выходом комплекса информационных систем государственных ведомств на новое качество управления на основе принципа самонастраивающейся интеграции. Интеграция стандартизированных сетевых инфраструктур с применением облачных принципов, предполагающих распределенную и удаленную обработку и хранение данных на основе взаимодействия и объединения корпоративных сетевых сред различных владельцев (арендаторов и т.п.) цифровых активов, позволяет осуществить превращение традиционных линейно-иерархических цепей управленческих транзакций в подключенные, интеллектуальные, масштабируемые, настраиваемые и распределенные управленческие сети. Внедрение универсальных оболочек любых бизнес-процессов позволяет обеспечить устойчивость цифровой экономики России.

Ключевые слова: цифровая экономика, государственные ведомства, управление, многоагентная оптимизация, самонастраивающаяся интеграция

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TRANSFORMATION OF INFORMATION INFRASTRUCTURES OF GOVERNMENT DEPARTMENTS IN THE CONSTRUCTION OF THE DIGITAL ECONOMY

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Abstract: The article analyzes the problems of forming a super-system of the digital economy in Russia using the key business model of joint use of digital assets by state departments and commercial structures with the final output of a complex of information systems of state departments for a new quality of management based on the principle of self-adjusting integration. Integration of standardized network infrastructures using cloud principles that involve distributed and remote processing and storage of data on the basis of interaction and integration of corporate network environments of different owners (tenants, etc.) of digital assets, allows the conversion of traditional linear hierarchical chains of management transactions in connected, intelligent, scalable, customizable and distributed management networks. The introduction of universal shells of any business processes allows to ensure the stability of the digital economy of Russia.

Keywords: digital economy, government departments, management, multi-agent optimization, self-tuning integration

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Introduction

Currently, there is no single methodological basis for the formation of a system-structured approach to the enhancement – based on the digital dominant – the manageability of the Russian economy with the expansion of the optimized indicators range for individual information systems of government agencies and their aggregated groups. [Kovalchuk, Stepnov, 2017. P. 33; Kozyrev, 2011. P. 132]

At the same time, in numerous scientific and practical developments, as well as in published works, special attention is paid to particular issues of improving management efficiency: electronic document flow; various means of collecting, transmitting and processing information; implementation of CPM, BPM, EPM, GIS, CPS, IOT, Big Data, Smart City, PLM, cyber-physical systems (CPS), Building Information Modeling (BIM) technology, RFID technology, Industry 4.0, managing industrial intelligence (MI) , "Web values" , etc. [Drozhzhinov, Raikov, 2017. P. 159; Loginov, Raikov, 2017. P. 8] Numerous normative documents and patchwork-segment projects of the Electronic Government, implemented in Russia both at the federal and regional levels, also belong here. Unfortunately, the program "Digital Economy of the Russian Federation" has not yet solved this problem, since it does not regulate the transition to new business models and only puts forward the tasks of forming in Russia a new regulatory framework and organizational conditions for the development of digital logic and intellectual mobility.

In this regard, there is an urgent need for new business models, which form the conditions and mechanisms for ensuring (that is very important for our country) civilized (including transparent) relations in business, and between the state and business.

The new business model for joint use of digital assets

The authors propose a business model for the joint use by government departments and commercial structures of digital assets on the basis of interaction and integration of corporate network environments among various owners (tenants, etc.) of digital assets.

Blockchain technology is an advanced technology for combining corporate networking environments, as the formation of distributed registers provides a combination of the databases, the identification of the owner, user, and information about the operator. [Aleksandrov, Savitsky, 2016. P. 179; Sokolov, Drozhzhinov, Raikov, Kupriyanovsky, Namiot, Sukhomlin, 2017. P. 192]

The advantage of implementing the business model proposed by the authors for the joint use by state institutions of digital assets for managing complex sets of information systems within the digital economy is the qualitatively broader possibilities for collecting, processing, storing and distributing information. Thus, the overall result of implementing the key business model of the joint use of digital assets by government departments and commercial entities is the improvement of management efficiency.

Within the framework of the business model for joint use of digital assets by state departments and commercial structures, it becomes possible to simplify and speed up the planning, adjustment, management, optimization and restoration of the parameters of the operation of complex information systems as elements of a quasi-unified system based on the principle of self-tuning integration[1]. [Loginov, Bortalevich, Shkuta, Loginova, 2017. P. 189; Sokolov, Zelentsov, Brovkina, Pavlov, Mochalov, Potryasaev, 2015. P. 11]

The use of cloud technologies and artificial intelligence

From the point of view of ensuring effective functioning, into the convergence architecture of telematics, computing and information services, it is necessary to include components that make up the invariant core of the standardized network of integrations infrastructures using cloud principles. [Evtyanova, 2017. P. 56; Mussel, Mussel, 2016. P. 74; Chechkin, 2015, P. 9] These principles presuppose distributed and remote processing and storing of data, based on the interaction and integration of corporate network environments of different owners (tenants, etc.) of digital assets integrated from separate quasi-autonomous elements in a network of distributed cloud computing centers within the digital economy super-system.

It is expected that the use of artificial intelligence will allow the transformation of traditional linear hierarchical chains of management transactions into connected, intelligent, scalable, customizable and distributed management networks fundamentally based on accessing digital assets (electronic content) accumulated in all subject areas. [Maryin, Larchenko, Kovalchuk, Knyazkov, Bolgova, Bukhanovsky, 2010. P. 123; Atymtayeva, Akzhalova, Kozhakhmet, Naizabayeva, 2011. P. 612] At the same time, the use of artificial intelligence elements will also increase the stability of the super-system within the limits of the permissible parameters of the functioning information systems of government departments due to the increased opportunities for monitoring and management. [Zlobin, Vasilyev, Ivashchenko, Khabibulin, Nikulin, 2010. P. 7; Ilyasov, Degtyareva, Makarova, Valitov, 2012. P. 220]

Integration of information systems of various clusters within the complex of information systems of state departments, forming the driver of network interaction, provides the opportunity to maintain the modes of self-tuning integration of the complex information systems and support in each of them a standard set of information, computing, etc. services as components of a dynamic computing mega-cluster of Russian government agencies.

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1 A self-tuning system is a cybernetic (or dynamic) adaptive system in which the memorization of information (the accumulation of experience) is expressed in the change of certain parameters which are essential for the purposes of the system // https://ru.wikipedia.org/wiki

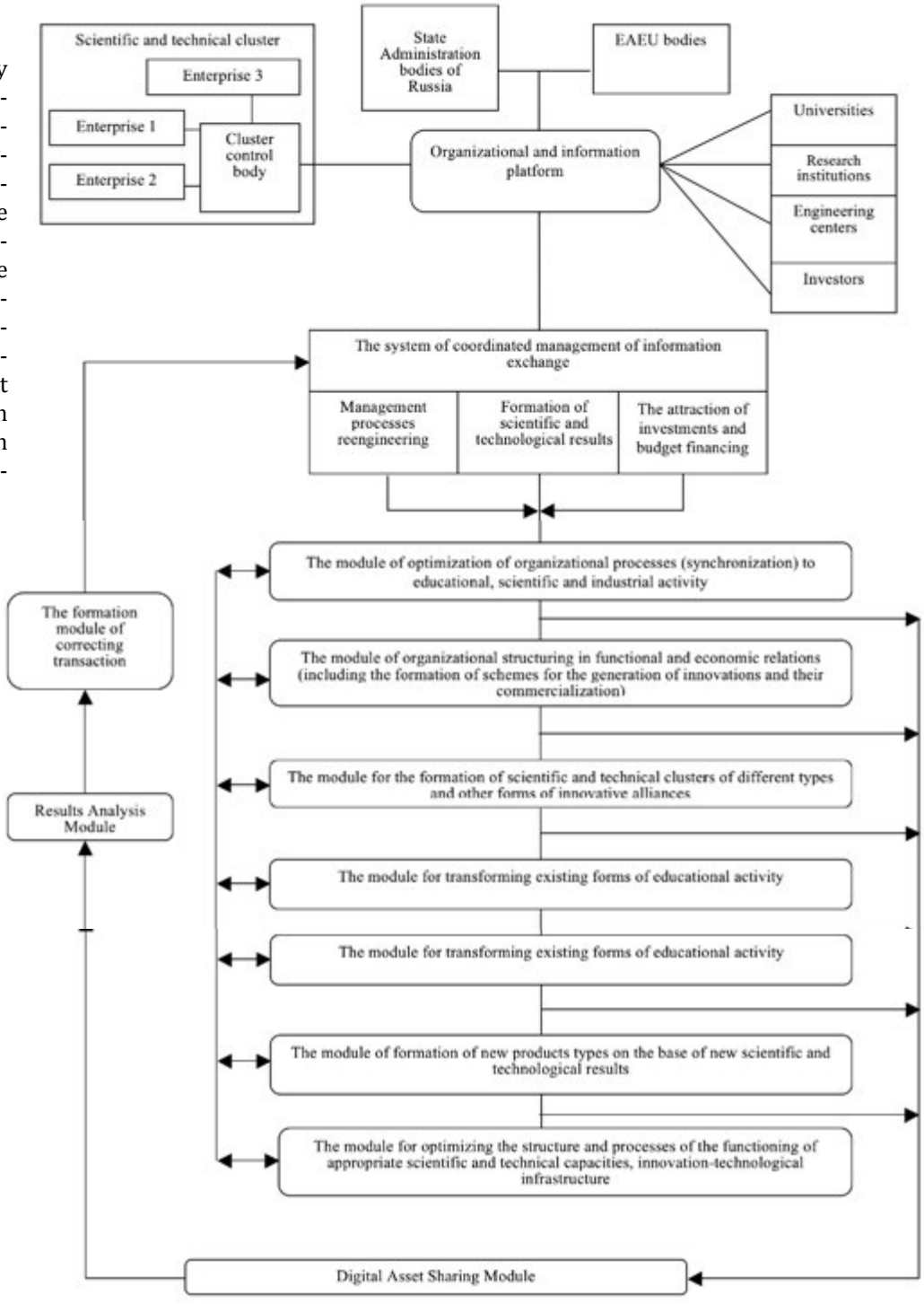
On the basis of monitoring, during the implementation of network interaction, there is an output on the identification of economic activity of a complex managed digital object, including creating increased risks. [Kudinov, 2011. P. 30; Lee, Choy, Law, Ho, 2014. P. 418] Here, monitoring the behavior of participants in the digital economic interaction, allows the development of organizational strategies of government agencies that reduce the increased risks and their characteristics (chronotype, participants, role structure, etc.). [Loginov, Shkuta, 2017. P. 25; Raikov, 2017. P. 298]

Structural relations determine the distribution, by computational knots as elements of a dynamic computing cluster of Russian government agencies, information packages that include structured information materials for building stable operational and communication interrelationships between the information systems complex of government agencies with a common organizational-information platform and a coordinated information exchange management system.

The integrated structure for managing scientific and technological development

The core of the coordinated information exchange management system should be the convergent information and computing platform, which simultaneously forms the driver for the network interaction of computing nodes as components of a dynamic computing cluster of Russian governmental agencies. Such a system should combine information, telematics and computing services for the possibility of network-centric integration of data in relation to the content of distributed databases, including communication among databases in a network of distributed cloud computing centers. Integration of standardized network infrastructures can be efficiently organized based on the implementation of cloud principles, from the processing of primary data to processing in the deep region with the use of advanced algorithms for multi-agent optimization of the next (after 3G) generation (based on 4G, 5G, etc.) in the framework of electronic mi-

Figure 1. The integrated structure for managing scientific and technological development. [Abramov, Bortalevich, Loginov, 2016. P. 83]



cro, meso and macro contents on horizontal, vertical and network principles.

This creates a possible opportunity to form a temporary, resource or operational-regime matrix of the studied economic process (for example, scientific and technological development) within the analyzed segment of the Russian economy, which can be based both on the analysis of an individual event (the result of an economic operation) and on aggregation and comparison of dissimilar economic events and network flows of such operations.

Figure 1 shows the proposed structure for the management of scientific and technological development, which allows providing the integration of mechanisms for managing scientific and technological development and, at the same time, creating a basis for optimizing the organizational-economic (economic, legal, etc.) interaction of all types of scientific and technical structures.

As it can be seen from Figure 1, the central element of the integrated structure for managing scientific and technological development should be the organizational and information platform and the system of coordinated management of information exchange.

In this integrated structure for managing scientific and technological development, it is possible to fundamentally improve the effectiveness of organizational mechanisms of public administration with the implementation of analysis in the interrelationships of key elements using a multi-aspect interpretation of the systematics links and operational-regime controlling transactions.

Advantages of the proposed solution for sharing digital assets are the opportunity for everyone to:

Use programs and computing services from the "clouds" (centers of cloud computing);

Support user's efforts to create, deploy, manage and turn off applications in the corporate cloud with their integration into management processes and procedures;

Interact and consolidate corporate network environment between various owners (tenants, etc.) of digital assets.

As a result, there is a distributed-network formation of measures to maintain optimal modes of interaction between the complex of information systems among government departments with a constant step-by-step comparison with the required normative model for the development of complex organizational and economic systems within the digital economy as a super-system.

Conclusion

The new technology provides a dynamic study of the semantics analysis of explicit and latent relationships in databases containing the necessary information on operational-regime situations. It offers automated monitoring and control with the specification of the basic characteristics of the system-dynamic analysis of the electronic content in managing transactions, while maintaining the modes of self-tuning integration in the information systems complex of government departments, with the formation of any studied process of self-tuning integration based on the results of analysis – temporary, resource or operational-regime matrix.

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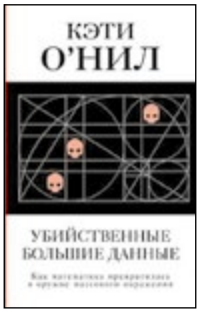
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ЧТО ЧИТАТЬ



О`Нил К. Убийственные большие данные

/ пер. с англ. В. Дегтяревой. М.: Издательство АСТ, 2018. 320 с.

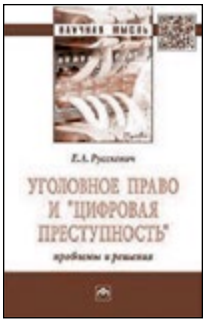
Математические алгоритмы с каждым днем все сильнее подчиняют себе нашу жизнь. Более того — по мнению автора книги, профессора математики и финансового аналитика, эти алгоритмы уже превратились в опасное оружие в руках государства и корпораций — и это оружие нацелено в первую очередь на самые бедные и незащищенные слои населения. При этом скрытые принципы работы математических моделей охраняются как величайшая коммерческая тайна, а их вердикты, подчас очевидно ошибочные и явно вредные, считаются окончательными и обжалованию не подлежат. Добро пожаловать в прекрасный новый мир — мир убийственных Больших данных!



Шнепс-Шнеппе М.А., Намиот Д.Е. Цифровая экономика: телекоммуникации – решающее звено.

М.: Издательство «Горячая линия – Телеком», 2018. 150 с.

От цифровой экономики никуда не спрячешься, как от кубинской игуаны: она видит и днем, и ночью. Слежение за каждым членом общества – это одна сторона цифровизации, весьма пугающая. Но есть и другая сторона, намного более важная, важная для возрождения величия России – модернизация народного хозяйства, что напоминает о Плане ГОЭЛРО, о возрождении планового хозяйства. Мы ограничиваемся обсуждением лишь одного направления Программы «Цифровая экономика Российской Федерации» – только информационной инфраструктуры, точнее, телекоммуникаций. Они, в определенном смысле, являются решающим звеном всей цифровой экономики. Книга для широкого круга читателей, интересующихся современными проблемами развития инфокоммуникаций, будет полезна специалистам и научным работникам, специализирующимся в области модернизации сетей связи.



Русскевич Е.А. Уголовное право и «цифровая преступность»: проблемы и решения.

Монография.М.: Издательство ИНФРА-М, 2019. 227 с.

Монография посвящена комплексу теоретико-прикладных проблем приспосабливания отечественного механизма уголовно-правовой охраны к «цифровизации» преступности в условиях становления информационного общества. Наряду с общетеоретическими вопросами глубокому анализу подвергается зарубежное уголовное законодательство и положения норм международного права. В работе представлена уточненная уголовно-правовая характеристика преступлений в сфере компьютерной информации, в том числе новеллы российского уголовного законодательства — неправомерного воздействия на критическую информационную инфраструктуру Российской Федерации (ст. 274.1 УК РФ), разработаны предложения по дифференциации уголовной ответственности за посягательства на безопасность компьютерных данных и систем, выработаны научно обоснованные рекомендации по квалификации. Монография предназначена для научных сотрудников, преподавателей, практикующих юристов, студентов и аспирантов юридических вузов и факультетов.