

№	Статья и ссылка	Аннотация
1.	<p>Kolesnikov, O., Biloshchytskyi, A., Gogunskii, V., &amp; Khomiak, A. (2020). Development of a markov model of the information environment as a communication system in the scientific sphere. <i>Scientific Journal of Astana IT University</i>, 2, 4-17.  <a href="https://doi.org/10.37943/AITU.2020.95.36.001">https://doi.org/10.37943/AITU.2020.95.36.001</a></p>	<p>The paper presents the theoretical foundations of creating the educational environment of an educational institution using the project approach at the stage of building models and displaying communications in the information environment following GOST R 54869 – 2011. The article considers the Markov process with discrete states, discrete-time, and homogeneous characteristics of transition probabilities. The latter means that the transition probabilities for the series do not change over time. The set of specific values of transition probabilities characterizes the level of organizational maturity of the project. A unified method of transformation of iconographic models of states of complex systems in the Markov chain is developed. The method has sufficient simplicity of the mathematical apparatus and high reliability of the mapping of the phenomenological properties of stochastic systems. The developed model allows us to study the features of communication processes incompetently oriented information training systems in the educational environment of educational institutions and to obtain a quantitative assessment of the effectiveness of such systems. The management of educational activities of an educational institution should be considered as a continuous process of improving its activities in the conditions of modern competition in the market of educational services. The proposed model, based on the project approach, will allow the efficient use of material resources, as well as flexibly respond to any changes both within the educational institution and in the external environment.</p>
2.	<p>Kravchenko, O., Plakasova, Z., Gladka, M., Karapetyan, A., &amp; Besedina, S. (2020). Application of information technologies for semantic text processing. <i>Scientific Journal of Astana IT University</i>, 2, 18-31.  <a href="https://doi.org/10.37943/AITU.2020.75.91.002">https://doi.org/10.37943/AITU.2020.75.91.002</a></p>	<p>An expert system for text analysis based on the heuristic knowledge of an expert linguist is proposed. Methods of linguistic analysis of the text through the use of computer technology have been further developed. Data verification was performed on the example of the Germanic language group. The algorithm of the system operation is given. The sequence of actions of the text analysis process is described. Research relates to the subject of computational linguistics and helps to automate text analysis processes. The main purpose of the research is to improve the machine's understanding of the semantic structure of the text by finding current connections between the main members of the sentence, current connections between secondary members of the sentence, the best concept of the current word and the function of the current word in the sentence. Semantic networks are used in the software solution. The Java programming shell, such as NetBeans IDE 8.1, and the CLIPS shell, were used to create the software product. The main logical connections and structure of the program are described in the article. Methods and relations are considered on the example of the Germanic group of languages. All languages of the Germanic group are similar because they have a direct line of words which makes them even more similar: subject + predicate + subordinate clauses</p>
3.	<p>Lukianov, D., Kolesnikova, K., Mezentseva, O., &amp; Rudenko, V. (2020). The kübler-ross factor in managing the performance of technical and socio-economic systems. <i>Scientific Journal of Astana IT University</i>, 2, 32-43.  <a href="https://doi.org/10.37943/AITU.2020.94.59.003">https://doi.org/10.37943/AITU.2020.94.59.003</a></p>	<p><b>Abstract:</b> The article proposes to consider the possibility of using the Kübler-Ross model as a mandatory and necessary addition when restoring systems after critical failures, accidents, and other catastrophic events. As stages of the model, it is proposed to consider the “extension” of the classical Kübler-Ross model in the form of an Extended Grief Cycle. Moreover, each “stage of the model” is considered as a separate “state” of the system. It is also assumed that the transition from any state of the model is possible not only “linearly forward”, but also in any other direction. Moreover, the probabilities of such transitions do not depend on the previous history of the system. Such an assumption allows us to consider the possibility of interpreting the created model as a Markov model, and, accordingly, to apply the mathematical apparatus of Markov chains for its study. It is proposed to consider such a characteristic of an effective recovery system as the “readiness” of a recovery team to transition to a productive state as soon as possible from the point of view of group dynamics and the effectiveness of the distribution of team roles. For this, it is proposed to use the logic of the team role model of R. Belbin. Minimizing the time to achieve the effect of maximum effectiveness in emergency situations in the context of the concept of incident preparedness and continuity of work, in this case, will depend not only on technical and other means of response but also on the psychological stability of the recovery team members, the effective allocation of roles and readiness for adequate action. This is confirmed by the results of transient modeling. The simulation results show the dominant value of the probabilities of being in the states of “shock” and “inoperative system” if you do not control the system purposefully and do not go through all stages of the Extended Grief Cycle model sequentially, one after another.</p>

		<p><b>Key words:</b> The Extended Grief Cycle, Kübler-Ross model, Model R. Belbin roles, Markov model of communications, performance recovery, business continuity, reliability, hazardous event, Business Continuity Management Lifecycle Stages, preparedness for hazardous situations and incidents.</p>
4.	<p>Kravchenko, Y., Leshchenko, O., Trush, A., Dukhnovska, K., &amp; Kovtun, O. (2020). Synergetic approach to the study of control systems. <i>Scientific Journal of Astana IT University</i>, 2, 44-52. <a href="https://doi.org/10.37943/AITU.2020.68.59.004">https://doi.org/10.37943/AITU.2020.68.59.004</a></p>	<p>The paper considers a new direction of scientific research – «synergetics». The key provisions and its development as a science are considered. The focus is on open feedback systems as objects of research. The properties of these systems – openness, nonlinearity, dissipation and multidimensionality, allow the use of a synergistic approach in the study. Due to new trends in information technology in recent years, interest in the new architecture of Software Defined Networks has grown. A programmable controller is used as a control mechanism for SDN networks. The connection between the logical controller and the physical network is made using the OpenFlow protocol. The graph of the network topology is presented as a set of key parameters that come to the controller. From the set of parameters, the key ones used in the study are selected. The dynamics of the ratio of key parameters under the condition of optimizing the network infrastructure is studied. The dynamics of the network corresponding to the stability condition is investigated by the methods of synergetic control theory. SDN network control is formed by methods based on the principle of self-organization of nonlinear systems. As a result, synergetic control is synthesized to increase the resistance of the control system to destructive influences. Based on the selected dynamic invariant, the possibility of providing the selection of the parameter of the SDN network management system for the transition to a controlled state is shown.</p>
5.	<p>Zhumekenov, A. (2020). Complex event processing approach on subscribers' data of telecom operator. <i>Scientific Journal of Astana IT University</i>, 2, 53-59. <a href="https://doi.org/10.37943/AITU.2020.95.28.005">https://doi.org/10.37943/AITU.2020.95.28.005</a></p>	<p>Nowadays the usage of mobile phones has reached extremely large worldwide proportions and is increasing dramatically. There is a stronger need to decrypt the important information that is hidden among them. Even all required information is gained, processes of companies remain static and can not be changed dynamically to adapt to actual business needs, reducing the advantages that can be achieved. Every second millions of raw information are being generated by mobile users, which handled by Telecom operators in data servers. By using Complex Event Processing (CEP) approach in real-time, we can obtain the information that really matters to our business and use it to monetize the vast amount of data that is being collected through mobile phone usage. In this paper, we present an internally developed framework that combines the strengths of CEP and business process implementations which allows us to react to the needs of today's fast-changing environment and requirements. We demonstrate 3 simple use case scenarios to show the effectiveness of the CEP approach in our situation. The importance of implementing the CEP approach on subscribers' data should not be overlooked as means of trying to capitalize on new services, however, have to be considered as a challenge to give subscribers the opportunity to get more customized offers and services.</p>
6.	<p>Bondar, A., Bushuyev, S., &amp; Onyshchenko, S. (2020). PROJECT MANAGEMENT FIGHTING AGAINST ENTROPY OF THE ORGANIZATION. <i>Scientific Journal of Astana IT University</i>, 2, 60-70. <a href="https://doi.org/10.37943/AITU.2020.88.62.006">https://doi.org/10.37943/AITU.2020.88.62.006</a></p>	<p>Abstract: This study examined the informational entropy of project-oriented organizations within the framework of the energy-entropy concept. The relationship between energy entropy and informational (structural) entropy of project-oriented organizations is established. A conceptual model of the formation of informational entropy of project-oriented organizations and its impact on energy entropy is built. The presented approach corresponds to the integral consideration of the “information (structural)” and “energy” processes of the organization, which most reflects the real conditions and essence of the organizations. An approach to identifying the essence of events, the probabilities of which form the informational entropy of a project-oriented organization, is presented. The approach is based on the formation of intervals on a range of values, taking into account their normal distribution law. In the research process, the relationship between the informational entropy of the project and the law of distribution of its results is established. It is proved that the struggle with the entropy of both types is a struggle to reduce the dispersion of the results of organizations, which can be achieved through project-oriented management. The advantage of project-oriented management is that it allows you to reduce these variances, due to: a flexible system for the distribution of human resources for projects taking into account their value; focusing the project team exclusively on a specific project and ensuring it creates the conditions in the external environment that are more clearly predictable and, therefore, have minimal dispersion.</p> <p>Keywords: informational entropy, energy, dispersion, distribution, project, organization.</p> <p>В данном исследовании рассмотрена информационная энтропия проектно-ориентированных организаций в рамках энергоэнтропийной концепции. Установлена взаимосвязь между энергоэнтропией и</p>

		<p>информационной (структурной) энтропией проектно-ориентированных организаций. Построена концептуальная модель формирования информационной энтропии проектно-ориентированных организаций и ее влияния на энергоэнтропию. Представленный подход соответствует интегральному рассмотрению «информационных (структурных)» и «энергетических» процессов организации, что в наибольшей степени отражает реальные условия и сущность деятельности организаций. Представлен подход к идентификации сущности событий, вероятности которых формируют информационную энтропию проектно-ориентированной организации. В основе подхода лежит формирование интервалов на диапазоне значений с учетом их нормального закона распределения. В процессе исследований установлена взаимосвязь между информационной энтропией проекта и законом распределения его результатов. Обосновано, что борьба с энтропией обеих видов является борьбой за уменьшение дисперсии результатов деятельности организаций, что может быть обеспечено благодаря проектно-ориентированному управлению. Преимуществом проектно-ориентированного управления является то, что оно позволяет снизить указанные дисперсии, за счет: гибкой системы распределения человеческих ресурсов по проектам с учетом их ценности; сосредоточения проектной команды исключительно на конкретном проекте и обеспечения его формирование таких условий во внешней среде, которые более четко прогнозируемы, а, следовательно, обладают минимальной дисперсией.</p>
7.	<p>Bushuyeva, N., Kozyr, B., &amp; Zaprivoda, A.(2020). MULTILEVEL HYBRID INFRASTRUCTURE PROGRAM MANAGEMENT. <i>Scientific Journal of Astana IT University</i>, 2, 71-85.  <a href="https://doi.org/10.37943/AITU.2020.20.47.007">https://doi.org/10.37943/AITU.2020.20.47.007</a></p>	<p>Abstract: An analysis of trends in the development of infrastructure management systems shows that the key factors are reliability of implementation, efficiency in creating values and environmental harmonization. At the same time, increasing the level of efficiency of infrastructure programs are strategic areas of development for most countries of the world. A key role in successfully solving pressing problems of infrastructure projects and programs, including the satisfaction of certain sectors of the economy with an improvement in the environment, is to determine innovative technologies aimed at the development of “intelligent” technologies. The analysis of the problems of systems of regions, cities, towns and consumers determined the relevance and practical importance of research on the implementation of infrastructure projects in turbulence, the construction of a hybrid multi-level methodology for managing infrastructure programs based on a convergent balanced approach. At the same time, problems and challenges were identified regarding the implementation of infrastructure projects and programs as development drivers. A holistic model for solving the problems of implementing infrastructure projects and programs on the basis of multi-level dual management within the framework of hybrid methodologies combining different models according to the principles of management has been built. The experimental studies of the proposed approaches, models and methods for managing infrastructure programs have confirmed their adequacy and effectiveness. The methodology of multi-level proactive dual management of infrastructure projects based on adaptive technologies is based on three interconnected adaptive systems: planning and formation, monitoring and change management, and regulates the formation of resilient to disturbances in the management process, which helps to prevent a significant decrease in the quality of management and loss of controllability of project activities.</p> <p>Keywords: multi-level system, hybrid methodology, proactive management, infrastructure programs.</p> <p>Анализ тенденций развития систем управления инфраструктурными программами показывает, что ключевыми факторами являются надежность реализации, эффективность при создании ценностей и экологическая гармонизация. При этом повышение уровня эффективности инфраструктурных программ являются стратегическими направлениями развития большинства стран мира. Ключевую роль в успешном решении насущных проблем инфраструктурных проектов и программ, включая удовлетворение определенных отраслей экономики с улучшением состояния окружающей среды, определять инновационные технологии, направленные на развитие «интеллектуальных» технологий. Проведенный анализ и проблем систем регионов, городов, поселков и потребителей определил актуальность и практическую значимость исследований, по реализации инфраструктурных проектов в условиях турбулентности, построения гибридной многоуровневой методологии управления инфраструктурными программами на основе конвергентного сбалансированного подхода. При этом выявлены</p>

		<p>проблемы и вызовы по внедрению инфраструктурных проектов и программ как драйверов развития. Построена холистическая модель решения проблем реализации инфраструктурных проектов и программ на основе многоуровневого дуального управления в пределах гибридных методологий, объединяющих разные по принципам управления модели. Проведенные экспериментальные исследования предложенных подходов, моделей и методов управления инфраструктурными программами подтвердили их адекватность и эффективность. Методология многоуровневого проактивного дуального управления инфраструктурными проектами на основе адаптивных технологий базируется на трех взаимосвязанных адаптивных системах: планирование и формирование, мониторинга и управления изменениями, и регламентирует формирование устойчивого к возмущениям в процессе управления, позволяет предотвращать существенному снижению качества управления и потере управляемости проектной деятельности.</p>
8.	<p>Bushuev, S. D., Bushuev, D. A., &amp; Neyzvestnyi, S. Y. (2020). Convergence and hybridization of project management methodologies. <i>Scientific Journal of Astana IT University</i>, 2, 86-101.  <a href="https://doi.org/10.37943/AITU.2020.22.12.008">https://doi.org/10.37943/AITU.2020.22.12.008</a></p>	<p>Abstract: The subject of this article is the development of hybrid methodologies for managing projects, programs and project portfolios. Significant reductions in the life cycles of infrastructure programs, which contain projects of various lines of activity and various management methodologies, for example, waterfalls with a rigid life cycle and Agile with a flexible methodology life cycle, require the use of convergence tools to form “hybrid” methodologies. The goal is to develop a convergent approach to building hybrid project management methodologies in terms of decision-making processes in project management based on various platforms. The results of the study were obtained based on of using a convergent approach to build a methodology for managing infrastructure projects and programs. A substantial model of the obtained hybrid methodology for project and program management is presented.</p> <p>Conclusions: Hybrid methodologies for project and program management are becoming more popular in this category of programs. The main reason is the presence in the program of components with different life cycles, and, consequently, methodologies that require integration and harmonization. The methodology is tested by the practice of using the mechanisms of hybrid multi-level systems for managing infrastructure projects and programs. A study of hybrid project and program management methodologies defined by the practice of introducing various, in fact, program components. The use of a hybrid project management methodology allowed the authors to carry out various, in fact, projects on time with a specified budget. On the example of complex construction projects and projects for the creation of information and communication infrastructure management systems. Further areas of research are associated with a detailed study of the mechanisms of harmonization, integration, convergence and updating.</p> <p>Keywords: model convergence, hybrid management methodologies, program, interaction model of basic project management methodologies, program manager.</p> <p>Предметом статьи является разработка гибридных методологий управления проектами, программами и портфелями проектов. Существенные сокращения жизненных циклов инфраструктурных программ, которые содержат проекты различных направлений деятельности и различными методологиями управления, например «водопадные» с жестким жизненным циклом и Agile с гибким жизненным циклом методологии, требуют использования инструментов конвергенции для формирования «гибридных» методологий. Цель – разработать конвергентный подход к построению гибридных методологий управления проектами с точки зрения процессов принятия решений в управлении проектами на основе различных платформ. Результаты исследования получены на основе использования конвергентного подхода к построению методологии управления инфраструктурными проектами и программами. Представлена содержательная модель полученной гибридной методологии управления проектами и программами. Выводы: гибридные методологии управления проектами и программами становятся более востребованными в этой категории программ. Главной причиной является наличие в программе компонентов с различными жизненными циклами, а следовательно, и методологиями, которые требуют интеграции и гармонизации. Методологию проверено практикой использования механизмов систем гибридного многоуровневого управления инфраструктурными проектами и программами. Исследование гибридных методологий управления проектами и программами, определенных практикой внедрения</p>

		<p>различных, по сути, компонентов программ. Применение гибридной методологии управления проектами позволило авторам выполнить различные, по сути, проекты в оговоренные сроки с заданным бюджетом. На примере сложных строительных проектов и проектов создания информационно-коммуникационных систем управления инфраструктурой. Дальнейшие направления исследований связаны с детальной проработкой механизмов гармонизации, интеграции, конвергенции и актуализации.</p>
9.	<p>Kan, O., &amp; Murykh, E.(2020). CONFIDENTIAL INFORMATION SECRET METHOD. <i>Scientific Journal of Astana IT University</i>, 2, 102-109.  <a href="https://doi.org/10.37943/AITU.2020.15.23.009">https://doi.org/10.37943/AITU.2020.15.23.009</a></p>	<p>Abstract: The article deals with the issues of hiding text information in a graphic file. Most often, one or two least significant bits of the image pixels are modified. To do this, each byte of the secret message is divided into 8 or 4 parts. The use of the least significant bits of the graphic file for transmitting a secret message significantly limits the size of the original message, in addition, it allows steganographic analysis programs to detect and decrypt the transmitted data. A formula for hiding textual information in image pixels is proposed. The algorithm for hiding information is that the bytes of the secret message are mixed with the bytes of pixels of the key image using a secret formula. The result is new bytes of image pixels. A steganography scheme has been developed for embedding secret text in random image pixels. Random bytes are pre-embedded in each pixel row of the original image. As a result of the operations, a key image is obtained. Text codes are embedded in random pixel bytes of a given RGB channel. To generate a secret message, the characters of the table of ASCII codes are used. The detection and decryption program compares the pixels of the received image with the pixels of the key image in the specified RGB channel and extracts the codes of the encrypted text. The use of abstract images as a key image significantly increases the reliability of the protection of confidential information, since in such images there is a random change in pixel values. Demonstration programs for encryption and decryption in the Python 3.5.2 programming language have been developed. A graphic file is used as the decryption key. The developed steganography scheme allows not only transmitting sensitive information, but also adding digital fingerprints or hidden tags to the image.</p> <p>Keywords: steganography, information hiding, image key, image pixels, embedding formula.</p>
10.	<p>Ryspayeva, M., &amp; Salykova, O. (2020) DETERMINATION OF PARAMETERS AND THEIR RELATIONSHIPS IN SOCIAL NETWORK ACCOUNTS. <i>Scientific Journal of Astana IT University</i>, 2, 110-120.  <a href="https://doi.org/10.37943/AITU.2020.12.13.010">https://doi.org/10.37943/AITU.2020.12.13.010</a></p>	<p>Abstract: The article provides an overview of citizens' participation in social networks according to the results of 2018 in the Republic of Kazakhstan in comparison with the data of the Statistics Committee. From year to year, the main goals of Internet use by residents of the country are participation in social networks, posting information and instant messaging, which show an increasing interest in social networks. In turn, the article's purpose is to determine the parameters that indicate real and fake accounts on social networks and the distribution of parameters in groups. According to open information on social networks and their APIs, three groups of the parameters were selected: account information, completeness of the account, and friends. The groups of parameters are given by the example of using the Graph API Explorer of the Facebook. The relationships between the parameters were analyzed, and their effect on the decisions of the algorithms was determined. The hypothesis is outlined that, it is possible to more accurately determine the ownership of accounts on the basis of friends and family relationships. Often, an account contains bot behaviour; however, it belongs to a person. The algorithms must identify the actions of these exceptions. The researchers suggest that the special influence on the algorithm results within the "Friends" parameters can be defined with a detailed scan of family relationships.</p> <p>Key words: Social networks parameters, fake accounts, data relationships, big data, social networks.</p> <p>В статье приведена статистика использования социальных сетей по итогам 2018 года на территории Республики Казахстан в сравнении с данными Комитета статистики. Из года в год основными целями использования Интернет гражданами страны является участие в социальных сетях, размещение информации и обмен мгновенными сообщениями, что показывает все увеличивающийся интерес к социальным сетям. В свою очередь, целью статьи является определение параметров, указывающих на реальность аккаунта. Отобраны три группы параметров: информация об аккаунте, наполненность аккаунта и друзья. Согласно открытой информации социальных сетей и их API, каждая группа включает в себя ряд параметров, указывающих, что аккаунт принадлежит реальному или фейковому пользователю. Пример указанных групп параметров приведены на примере использования Graph API Explorer социальной</p>



		<p>сети Facebook. Дополнительно, проанализированы зависимости между параметрами и как они могут повлиять на результаты алгоритма. В статье предложена гипотеза – на основе друзей и выявленных родственных отношений, возможно более точно определить принадлежность аккаунтов к реальному человеку и результаты проверки гипотезы.</p>
--	--	---