SOCIO–ECONOMIC DEVELOPMENT OF ENTERPRISE USING ORGANIZATIONAL AND COMMUNICATION PLATFORM FOR ENTERPRISE MANAGEMENT IN CLOUD ENVIRONMENT

СОЦІАЛЬНО–ЕКОНОМІЧНИЙ РОЗВИТОК ПІДПРИЄМСТВА З ВИКОРИСТАННЯМ ОРГАНІЗАЦІЙНО-КОМУНІКАЦІЙНОЇ ПЛАТФОРМИ ДЛЯ УПРАВЛІННЯ ПІДПРИЄМСТВОМ В CLOUD- СЕРЕДОВИЩІ

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The article substantiates the relevance of the introduction of new methods for solving the problem of organizational and communication planning of the cloud service for business process management at the enterprise. The scientific and methodical approach to managing business processes at the enterprise is developed through the cloud system of business process ranking for increasing the competitiveness of the enterprise and its dynamic development, as well as the enterprise management system is proposed, which implies the introduction of a model of tasks and resources performed in a cloud environment on all levels of administrative units. The use of the proposed scientific methodological approach allows us to solve the problem of organizational and communication planning of the cloud service to manage business processes in the enterprise. In an experimental way, it is the construction of a mathematical model for assigning tasks and resources that are executed in a cloud.
The result of this work is to study the socio-economic development enterprise where further development in this direction is the construction of information-communication platform for enterprise management in the cloud using the mathematical model for the distribution of tasks in the cloud.
Key words: *organizational and communication platform, cloud service; enterprise, business planning, GRID-system.*

У статті обґрунтовано актуальність запровадження нових методів вирішення задачі організаційно-комунікаційного планування роботи хмарного сервісу для управління бізнес-процесами на підприємстві. Розроблено науково–методичний підхід до управління бізнес-процесами на підприємстві через хмарну систему ранжування бізнес-процесів для підвищення конкурентоспроможності підприємства та його динамічного розвитку, а також запропоновано систему управління підприємством, під якою розуміється запровадження моделі завдань і ресурсів, що виконуються в хмарному середовищі на всіх рівнях адміністративних одиниць. Використання запропонованого науково-методичного підходу дозволяє вирішити задачу організаційно-комунікаційного планування роботи хмарного сервісу для управління бізнес процесами на підприємстві. В експериментальному вигляді це побудова математичної моделі для розподілу завдань і ресурсів, які виконуються в хмарі.
Результатом даної роботи є дослідження соціально–економічного розвитку підприємства, де подальшим розвитком у цьому напрямі є побудова інформаційно–комунікаційної платформи для управління підприємством у хмарі за допомогою побудованої математичної моделі для розподілу завдань у хмарі.
Ключові слова: *організаційно-комунікаційна платформа, cloud-сервіс, підприємство, бізнес-планування, GRID-система.*

В статье обоснована актуальность внедрения новых методов решения задачи организационно-коммуникационного планирования работы облачного сервиса для управления бизнес процессами на предприятии. Разработан научно-методический подход управления бизнес-процессами на предприятии через облачную систему ранжирования бизнес-процессов для повышения конкурентоспособности предприятия и его динамичного развития, а также предложена система управления предприятием, под которой понимается внедрение модели задач и ресурсов, выполняемых в облачной среде на всех уровнях административных единиц. Использование предложенного научно-методического подхода позволяет решить задачу организационно-коммуникационного планирования работы облачного сервиса для управления бизнес-процессами на предприятии. В экспериментальном виде это построение математической модели для распределения задач и ресурсов, которые выполняются в облаке. Результатом данной работы является исследование социально-экономического развития предприятия, где дальнейшим развитием в этом направлении является построение информационно-коммуникационной платформы для управления предприятием в облаке с помощью построенной математической модели для распределения задач в облаке.
Ключевые слова: *организационно-коммуникационная платформа, cloud – сервис, предприятие, бизнес-планирование, GRID-система.*

Formulation of the problem. Cloud computing is designed to change the organization's approach to IT infrastructure and to identify different types of computing concepts, which include a large number of computers connected via the network in real-time communication.

For the organization of the cloud it is necessary and sufficient to understand what is cloud computing and from how they can be used in an industrial plant. Using cloud computing may provide access to large amounts of processing power fully virtualized data by pooling resources and providing a single view of system. In addition, the computing utility describes a business model which can be used for planning the enterprise cloud infrastructure.

Cloud technology is as sophisticated inside as it is easy outside. The basic concept of clouds is providing resources as Internet service. The paper presents a

method for solving the problem of organizational and communication planning for cloud service management of business processes at the enterprise. At the heart of electronic document management in enterprises can be an electronic signature and continuous access to electronic documentation via corporate email. In order to balance resource consumption in this paper it is proposed to use cloud technology. The platform for system management of business processes and electronic document flow works in a private cloud, the new methodology must be taken into account for the project based on the problem of virtual computer lab.

Review of the latest research papers and publications. The problem of information support of management processes for the machine building enterprises are explored by a number of Ukrainian scientist, namely, V. Ponomarenko, L. Taraniuk, H. Kozachenko, Yu. Pohorelov and others [1; 2; 3; 4]. The main attention is paid to methodological bases of information systems and their role in managing the economy. Modeling business processes, building their regulations, is a very important component in understanding the IT infrastructure of enterprises [5; 6]. Information resources management at the enterprise is impossible without building company services using cloud computing [7]. It is important to consider the restructuring and transformation of the company, using tools for data mining [8; 9; 10]. Organizational principles of business process reengineering machine building companies [4; 11; 12].

The analysis of literature sources, containing analysis regarding information support of management processes at an industrial enterprise, caused methodological development approaches to evaluation of the economic efficiency of the projects at enterprises. Taking into consideration the analysis of scientific sources of solving the problems of socio-economic development of the enterprise using organizational and communication platform for enterprise management in the cloud for its further dynamic development, the usage of cloud computing is a necessary and sufficient condition for the relevant projects at industrial enterprises where the further development in this area is the development of information-communication platform for enterprise management in the cloud using a mathematical model for distribution of tasks in the cloud.

The research goal of the article is to analyze the concept of socio-economic development of enterprises for organization and communication planning cloud service at an industrial enterprise. For the organization of the proposed usage of cloud computing it is proposed to use the cloud organization's approach to development of IT infrastructure of industrial enterprise, and to describe different types of computing concepts.

Presentation of the main research material. Effective solving of the problem of organizational and communication planning for cloud service management of business processes at the enterprise should be based on appropriate models of understanding the task and cloud computing resource, on which to execute the task. As a basis is proposed to use the model introduced in [5].

Cloud system that performs the task is a complex subject, which contains many interconnected heterogeneous resources, the operation of which is subject to a set of specific rules. One of the main objectives of this system is coordinated allocation of resources to solve the coming problems.

Model division of tasks in the cloud can be built based on two sets: the set of computing resources R, the set of tasks Z, as well as the distribution algorithm q, i.e. $G = \{R, Z\}$.

The tasks, which come in GRID-system form a stream $\{Z_i, i = 1, 2, ..., M\}$, where i – the serial number of assignment and M – the number of tasks. Each task includes a number of parameters necessary to run them in the cloud (1):

$$Z_i = \{ar_i^z, os_i^z, pc_i^z, ps_i^z, ms_i^z, dc_i^z, pr_i^z\}, \forall i = 1..M \quad (1)$$

where (architecture) – architecture processor;

os_i (operating system) – operation system;

pc_i (processor count) – quantity of processors;

ps_i (processor speed) – the speed of the processors;

ms_i (memory size) – the amount of RAM;

dc_i (Disk capacity) – the available hard drive space;

pr_i (Priority) – the priority of the job.

A task is a program or package of programs $\{z_a, a = 1, 2, ..., A\}$ $(z_a \in Z_i)$ united by a certain theme. All the programs that are included in the task $(z_a \in Z_i)$ run at the same time, if the job is divided into several computational resources, then the task will run simultaneously for all programs only if the requested resources are found.

Resources in the cloud system also form a set $\{R_j, j = 1, 2, ..., N\}$, where j – the number of the computing resource, and N – the number of total resources available. Any computational resource is described by a number of characteristics, which are represented by the tuple (2):

$$Rj = \{ar_j^r, os_j^r, pc_j^r, ps_j^r, ms_j^r, dc_j^r\}, \forall j = 1..N, \quad (2)$$

A set of resources R_j will dynamically change over time (removal/addition of a computational resource to the system, change of resource characteristics). In the role of resources can act as clusters, and individual workstations that provide the user access to operational and virtual memory, disk space, as well as processors of the computing resource. In different distribution systems, the input tuples (1) and (2) can have insignificant differences – this is due to the

fact that the systems are evolving and in the course of working with them there are the need to introduce additions related to the requirements of the task providers.

Conclusions. Main results of research are obtained in theoretical form as the relevance of solving the problem of organizational and communication planning for cloud service management of business processes at the enterprise. In an experimental form is the development of a mathematical model for the distribution of tasks and resources that run in the cloud.

The analysis of the concept of socio-economic development of enterprises for organization and communication planning cloud service in an industrial enterprise has been conducted. For the organization of the proposed use of cloud computing it is offered to change the organization's approach to IT infrastructure for industrial enterprises, and to describe different types of computing concepts.

The result of this work is to study the socio-economic development enterprise, where further development in this direction is the development of information-communication platform for enterprise management in the cloud using the mathematical model for the distribution of tasks in the cloud.

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SOCIO-ECONOMIC DEVELOPMENT OF ENTERPRISE USING ORGANIZATIONAL AND COMMUNICATION PLATFORM FOR ENTERPRISE MANAGEMENT IN CLOUD ENVIRONMENT

This article discusses the relevance of the implementation of socio-economic development of the enterprise using organizational and communication platform for enterprise management in the cloud.

Business process management in the enterprise due to the location data in the cloud, as one of the leading trends in the world of information and communication technologies can implement a new quality management system business processes and effective process management in the enterprise. The problem is that this service, which is designed to address the effective management of the socio-economic development of the company and its business units are not sufficiently developed or is absolutely absent at the enterprises. It is appropriate to create a model of tasks and resources that work in cloud environment to provide new high quality scientific approaches to solving the problem of building information-communication platform for the industrial enterprises. Scientific – methodical approach to business process management in the enterprise through the cloud, in order to enhance the competitiveness of enterprises, can be the basis for the dynamic development of information-communication platform.

The purpose of this article is to analyze the concept of socio-economic development of enterprises for organization and communication planning cloud service for industrial enterprises. Methods proposed in this paper – is to build a mathematical model comprising interconnected heterogeneous resources, the operation of which is subject to a set of rules and objectives for information and communication infrastructure and its socio-economic development and the efficient organization of business processes in the enterprise.

Main research results obtained in theoretical form as the urgency of solving the problem of organizational and communication planning for cloud service management business processes in the enterprise. In a pilot is to build a mathematical model for the distribution of tasks and resources that run in the cloud.

So, at this stage of development of modern engineering industry the issues of further cloud service development become more and more urgent. That is why the deployment of cloud service for organizational-communication management is now a necessary change management processes at the company and its socio-economic development.