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About the Concept of Information Support System for Innovative Economy in the Republic of Kazakhstan

Irbulat Utepbergenov[1], Leonid Bobrov[2], Irina Medyankina[2], Zinaida Rodionova[2(✉)], and Shara Toibaeva[1]

[1] Institute of Information and Computational Technologies, 125 Pushkin Street, Almaty 050010, Republic of Kazakhstan
i.utepbergenov@gmail.com, shara_t@mail.ru

[2] Novosibirsk State University of Economics and Management, 56 Kamenskaya Street, Novosibirsk 630099, Russia
l.k.bobrov@nsuem.ru, {i.p.medyankina, z.v.rodionova}@edu.nsuem.ru

Abstract. The development of mechanisms ensuring functioning of a unified data-processing environment in the Republic of Kazakhstan is a priority for the innovation development. This is especially important for multidisciplinary innovation projects, when close cooperation between ICT and innovation activity subject areas is necessary. Here, information resources and technologies play a decisive role in the development of basic innovation infrastructure. Also, they allow innovators to concentrate on solving the most important tasks without duplicating tasks solved by others earlier.

A brief analysis of the current situation in the field of information support for innovative development, which affects the terminological, theoretical, methodological and informational aspects, is given. The goal and objectives of information support system for innovative development are formulated. Basic principles underlying the creation of an information support system for the innovation economy in the Republic of Kazakhstan are described. Besides, the article gives a brief description of system architecture as a single entry point into the global information space through the created information portal. This portal contains meta-information both on Kazakhstan information resources and on the resources of other countries. The mathematical formulation of the problem of forming polythematic innovation cluster database is given. The solution of this problem allows minimizing total costs.

Keywords: Decision making systems · Information application · Methodology · Architecture · Math modeling

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1 Introduction

The development of innovative economy and the strengthening of innovation support infrastructure in order to form new industries in Kazakhstan require a scientific base considering the world experience and knowledge reflected in a huge amount of terabytes of diverse information [1, 2].

In this connection, at present, a team from the Institute of Information and Computing Technologies of Kazakhstan Ministry of Education and Science is working on a project aimed at creating a unified republican information support system for innovation activities.

The project includes studying problems of information support for innovations taking into account the specificity of individual stages of their life cycle, the development of theoretical and methodological approaches to solving these problems and the creation of appropriate working tools, as well as the formulation of specific project proposals for improving the regional information support system.

This paper presents the main principles of the concept of information support system for innovation activities in the Republic of Kazakhstan. The building of this system takes into account the specificity of individual stages of innovation life cycle.

2 Innovative Development and Digital Economy of Kazakhstan

The subheadings of the Global Innovation Index (GII), published annually by Cornell University, INSEAD and WIPO, clearly demonstrate the importance of innovation and attention to various aspects of innovation.

- The Human Factor in Innovation [3].
- Effective Innovation Policies for Development [4].
- Winning with Global Innovation [5].
- Innovation Feeding the World [6].

Annual ratings published in these indices reflect the dynamics of the innovative development of different countries and the effectiveness of their efforts. As an example, you can see the illustration of "Movement in the top 10 of the GII" [6].

The position of Kazakhstan in Global Innovation Index ratings is illustrated in Table 1, which, for comparison, also reflects the position of Russia.

Table 1. Kazakhstan and Russia in GII ratings

Country	2014	2015	2016	2017
Kazakhstan	79	82	75	78
Russia	49	48	43	45