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MODEL OF FACET AND HIERARCHICAL PYRAMIDAL SYSTEM OF SUPPORT OF MANAGEMENT OF INFORMATION SPACE OF CORPORATION

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Abstract. Essentially new direction of modeling description of digital environment allows creating problems formalization of main components of modeling digital-economic component state corporations having in advance not predetermined structure of management. The main difference is ambiguity directions of movements of trade and economic relations, lack codifiers and qualifiers defining the potential economic, social, controlling, and monitoring relations. In these conditions classical representation forms of government does not allow to present completeness of information exchange fully. The model of system of support management digital environment of corporation allowing systematizing processes, to submit stream data in a uniform format is presented in the article.

Keywords: corporations, support of management, modeling, multisets, processes.

INTRODUCTION

Since 90th historically developed commodity-money relations are directly connected to the uniform digital environment. The economic development of interstate level connected to import and export of goods and services since the first stages used artificial substitutes of the national currencies allowing carrying out transactions without additional converting. There were as a result uniform digital platforms of coordination of information streams at the organization of transactions of any level. Further two main directions of development of the organizations entering the international market were defined: the corporations having real interstate objects and independent digital platforms of the world digital environment in a basis. The second type for the last ten years was widely adopted thanks to introduction of digital currency and also transformation mechanisms in national and back. Nevertheless, the first type is more important and interesting from the point of view of modeling as it has more difficult instruments of management and also play more important role in the world market.

As a result, there appeared the need of management of such corporations with no geographical, social and state binding behind, i.e. corporations of common digital space. The existing practice has shown that many organizations in these conditions use the actual lack of uniform sets of rules, the settled regulatory base, the unified mechanisms control and auditing structures, etc., capable to coordinate and control commodity and economic procedures of information exchange of both the natural and digital environment in the uniform environment of the economic relations. As a result this problem doesn't allow government institutions to gain natural internal income from turns of subordinates of the digitized organizations.

Process of modeling and formalization of the main processes and objects is an essential solution of the problem to solve. In work the example of process of formalization of the unified model of organizational processes of the information environment of corporations of different level and a profile including elements of control of the digital-economic relations is given.

At the first stage the model of formalization of the main processes of execution of

transactions in the digital environment at expansion of sales market outside the Russian Federation is developed. Mechanisms are used to corporation of mining type that has allowed to improve efficiency of sales and also to organize export to neighboring countries with the smallest delays at the intermediate stages [1].

At the second stage the realized model received extension towards oil and gas branch. In case of accidents on large objects (for example, on the trunk pipeline) there was a problem of assessment of consequences of cross-border level. At the same time the mechanism allowing to define the unified system of payment of the stakeholders promoting further elimination of a problem and also prediction of costs of emergency recovery operations before complete elimination of consequences was necessary [2].

As a result, the received model including two systems of organizational management (pyramidal and matrix and hierarchical) has got formalization with use of algebraic submission of the theory of multisets on the main processes [3]. Use of facet model of data in the set restrictions became the following stage of the description of possible relations of not having accurately predetermined communications [4].

MODELING OF PROCESSES OF THE DIGITAL-ECONOMIC RELATIONS

The developed generalizing model of formalization of information streams of the relations represents synthesis of three main models of support of management (fig. 1) [5]:

– pyramidal, allowing to consider levels of management corporation of different level including tools of the carried-out tasks;

– hierarchical, the straight lines and the return target trees of the main performers of tasks allowing to form at different stages of life cycle;

– facet (matrix), allowing to introduce mechanisms of the digital relations without modification of the key main that promotes no violation of the settled commodity-money relations processes.

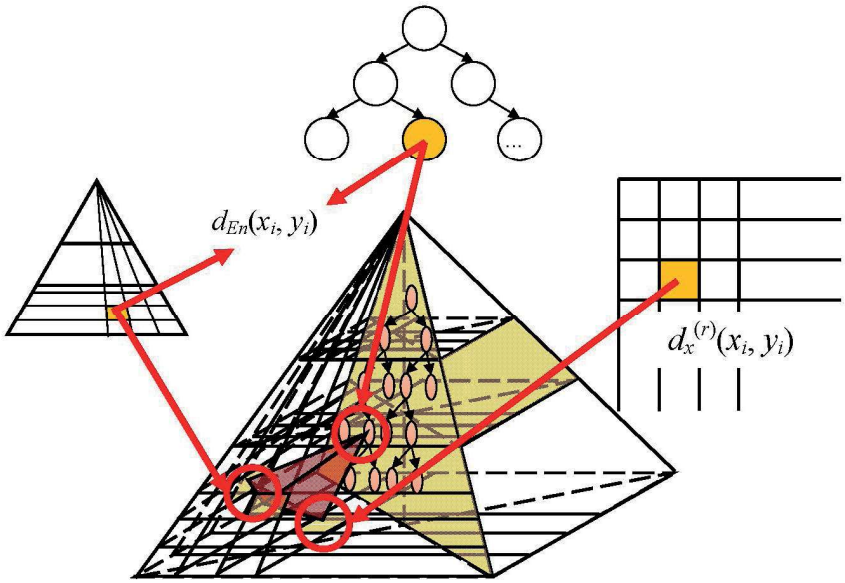

Fig. 1 A general view of developed model

As the systematizing model the mechanism of formalization I³-technology is used. Three independent variables (control objects of the commodity-money relations of a real and digital medium of $d_{En}(x_i, y_i)$ and also participants of process of $d_x^{(r)}(x_i, y_i)$) are synthesized as the initial arguments of the general scenario rule of inequality of a triangle in an Euclidean space of E^n (according to Cauchy-Bunyakovsky's theorem) created directly on places:

$$d_{En}(x_i,y_i)=\sqrt{\sum_i[(x_i-z_i)+(z_i-y_i)]^2}\leq\sqrt{\sum_i(x_i-z_i)^2}+\sqrt{\sum_i(z_i-y_i)^2}=d_{En}(x_i,z_i)+d_{En}(z_i,y_i) \quad (1)$$

$$d_x^{(r)}(x_i,y_i)=\frac{d_x(x_i,y_i)}{d_x(x_i,y_i)+d_x(x_i,r_i)+d_x(r_i,y_i)}. \quad (2)$$

The alternative option of the monetary relation on x and/or y is chosen. By synthesis in two planes the vector is formed (x, y), the coefficient of i shows a serial combination for the chosen cell of a hierarchical tree of z. Compliance is defined by the choice of the player – the participant of process. As a result we receive a figure similar to a triangle which according to pyramidal system has to satisfy to inequality (1). Communication between two cash flows and an object over which operation is made is as a result received.

At the following stage the scenario on the basis of which the received operation can be executed has to be defined. By formation of hierarchical association (unary, binary – for simple operations and n-unary for participants, compound with a set) the line of base of associations is filled, the call of the corresponding scenario of the faset of base of rules is made (2). The received pyramidal system from three interconnected triangles also has to correspond to inequality (1). As a result, the received rule with the use of associations base receives the reference to a cell of the uniform base of rules of the corporation allowing executing the constructed rule with attraction of necessary resources (fig. 2).

At the final stage the coordinator of rules forms the application in a temporary zone, builds the return target tree of estimated result and the additional line of the field of a trend.

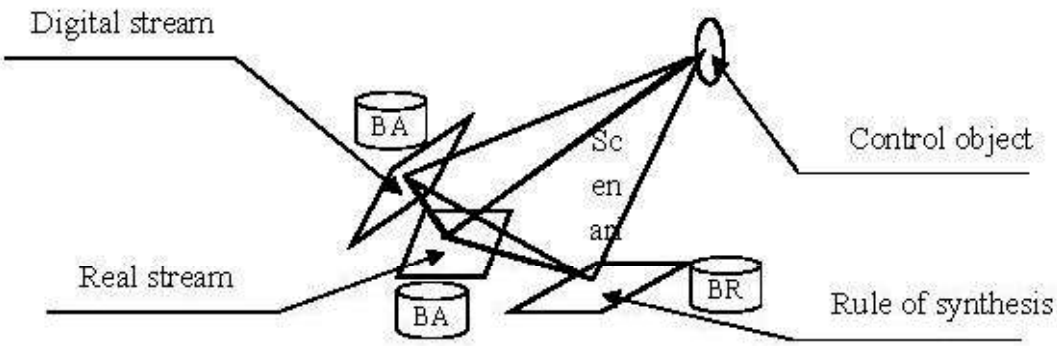

Fig. 1 Graphical representation of process of use of the I3 mechanism

CONCLUSION

At the moment, thanks to long-term practices and also practical experience in area of examinations of scenario development of business processes, the model allowing systematizing necessary for synthesis of the digital-economic relations with real processes of uniform commodity-money system is developed. The state corporations most relevant in the field in connection with new spirits of the times are obliged to conduct both interstate system, and in advance uncertain external, within flexible partner network. In these conditions, the offered model allows, without interfering with the main processes, to modify (to add, change, delete) a field of activity that allows to develop according to requirements of the competition.

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