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Russia as a configurator of a world railway system in the XXI century

The basic network of transport highways is a wide exit of Russia on the raw materials and production world markets, and also integration into global transport corridors

Vladimir V. Putin [1]

The statement of president made by V.V.Putin 10 years ago and has been taken out in the epigraph, today again is actively discussed by the Russian public and professional-railwaymen [2]. It represents the steady interest to a problem in the country, on extent of tracks taking the second place in the world after the USA. The given fact testifies to intentions of Russia to be not only "a power superpower", but also great transport power - the Configurator of a world transport network.

The problem of the article - to state an estimation by means of the system analysis within the limits of the game approach a possibility of realization the declared intentions at mutually acceptable forms of co-operation with the West, first of all with the USA. And also to show, how not only interests of Russia, but also the countries-partners can be met, if they wish effectively (and it is fair!) to transform the world market of transport services.
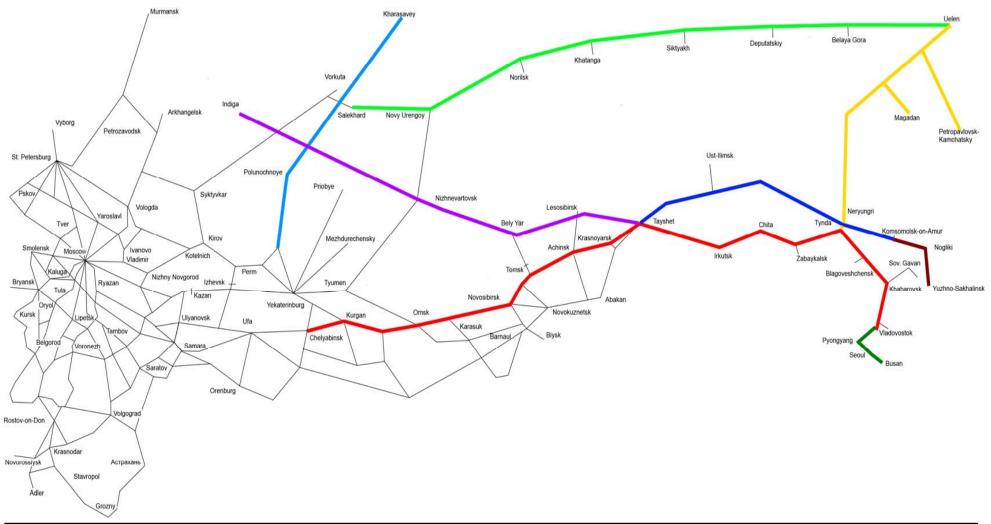
Preparation for estimation procedures (the first stage). Following the tradition of the system analysis firstly let's generate to begin a situation-standard that then, comparing possible scenarios of its change, structurally to discuss the

possible compromises and the consequences for Russia and the countries - participants in strategic game.

So, the situation-standard as much as possible is useful, in our opinion, for Russia in case of its "integration into global transport corridors" [see the epigraph]. Indeed now the sea carriers occupied the leading position at the world transport market in its inter country sector. They provide transportation of a primary part of cargoes through Suez and Panama channels in a triangle of the both Americas countries (Northern and Southern) - South East Asia - the European Union. Russia with its overland "transit" potential remains as though away from this transport "mainstream" owing to its traditional transport insufficiency. It can be explained by huge economic undeveloped spaces and transport communications costs. First of all it refers to the railways which should be necessarily laid, for example, in the Russian Asia, mainly in the extreme natural-climatic conditions. Besides traditional conservatism of the Russian leading elite should be taken into consideration, which during the tsarism ruined the project of the Great Siberian railway. Although Nikolay II, the last Russian emperor, approved the project. However the overland railway route "from New York to Paris" (so wrote newspapers at the beginning of the last century) has not been realized till now.

The Card-scheme presented below is a topological basis for the situation-standard description as a starting point of the further analysis in case if all Large-Scale Railway Projects (further - LSP) shown in it will be realized in the next 25 years.

"Whales" on which the situation-standard is based, represent eight LSP (see a legend to the Card-scheme), and their life cycles have been in various stages - from a design plan (as the Subpolar highway) to a stage of the next reconstruction (as the Trans-Siberian Railway and BAM). In addition to the Card-scheme let's give verbal, but the compact description of projects, focusing attention on their system interrelations called "everyone with everyone".

Card-scheme of the Russia, basic railway system and its Large-Scale Projects expansion

Explanation: ———— Railroad lines of a basic network operating 01/01/2014

Transsib ▬▬ BAM; ▬▬ CS+; ▬▬ TCM; ▬▬ Severosib+Barentskomur; ▬▬ UI-UP; ▬▬ PM; ▬▬ TransKorea

1. LSP **"Severosib+Barentskomur"** connecting through BAM and the Trans-Siberian Railway Pacific ports of Primorsky Kray with nonfreezing port Indiga in the Gulf of Indiga of the Barents Sea. Its sub-version is the project of Severosib+Belkomur[1] providing an exit to the port Arkhangelsk through Perm and Syktyvkar.

2. LSP **"Continent - the island Sakhalin+"**, assumes in the international megavariant except the transition of Nevelsky Strait and reconstruction of the Sakhalin railway constructed yet by Japanese, forcing of La Perouse Strait by means of tunnel transition and an exit through Hokkaido on a railway system of Japan. Through BAM and Severosib+Barentskomur it connects the ports of Japan and South Korea with nonfreezing Russian port Indiga on the Barents Sea.

3. LSP **"Transcontinental Magistral through Bering Strait"** is already not only international, but also, as appears from the name, intercontinental LSP. At least because its "large-scaling" is defined by the extent of a corresponding railroad line. Notably: it is defined together with bridge or tunnel transition of Bering Strait both Russian and Canadian-American sites - railway approaches to this barrier object.

4. LSP **"Subpolar Magistral"** (Salekhard-Uelen) - the largest liquidated in 1955[2] for that time the GULAG project providing at the first stage the laying of the downgrade railway along the Polar circle from station of Chum to Norilsk (through Igarka). At the second stage the exit through Yakutsk to Magadan and Uelen was assumed. On scales, in case of full realisation it also would be intercontinental LSP, but without barrier objects of an oceanic origin. Now the project fragment under the name "Northern latitudinal line" (on crossing with the project of meridional railway along East slope of the Ural ridge and further to ports Harasavey and Sabetta on peninsula Yamal) is in a stage of active realisation[3].

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[1] Northern-Siberian Highway + railway line «White Sea – Komi - Ural».

[2] The project has been stopped in 1953, practically right after death of its initiator I.V.Stalin. However we consider as date of liquidation of the project 1955 when the last prisoner was transported under guard from a highway line there (from approximately 90 thousand prisoners of GULAG enabled on its building) and the railway has turned in so-called "dead" [3].

[3] [http://www.cupp.ru/press_2013_45.html].

5. LSP **"Project of restoration and reconstruction of the Trans-Korean Magistral"** on a site of Rajin-Khasan to the present time at interaction of Russia and Democratic People's Republic of Korea (DPRK) is finished. This northern pilot site of a highway will allow to connect it to the Trans-Siberian Railway. Further on the Transkorean highway it is planning to direct the most part of the goods traffic from South Korea to Europe, Russia and the CIS countries, and in the opposite direction through the Trans-Siberian highway to ports of Republic Korea and DPRK.

However, how quickly there will be an opening of through movement on a highway from Khasan to Busan depends on a political situation on the Korean peninsula, and it rather obscured that does any forecasts about the project end doubtful. After realisation of TKM project the possibility of direct railway transportation between the countries of the Korean peninsula with the countries of Northern and the South America will be opened.

6. LSP **"Project Ural Industrial - Ural Polar"** in the initial version assumed creation of a unique industrially-infrastructural complex on the basis of Subpolar and Polar Ural raw materials development, and also building of key elements of a basic power and transport infrastructure. In the latter case the railroad line Polunochnoye - Obskaya was such element. It in aggregate with under construction lines Obskaya - Bovanenkovo, Obskaya - Salekhard - Nadym connected Industrial Ural with mineral deposits of Polar Ural, an oil extraction zone and provided an opening to Norilsk.

Now, initial LSP of an infrastructure-industrial complex is corrected and partially suspended. Within the limits of its infrastructural subsystem it has received continuation in the project "Northern latitudinal line" and thus has impulsed development of the Subpolar highway.

7. LSP "Project of the Trans-Siberian Magistral modernization" is closely connected with modernization of a **Baikal-Amur Magistral** since these parallel railways provide today delivery of cargoes and passengers in an in-Russian

turnover and from Europe to South East Asia in an international turnover. Both highways are typical for Russia: being the system they form a strategic infrastructural complex of Transbaikal, but it is low effective today at commercial level [4]. Nevertheless, both highways possess high transit potential which can be effectively realized only in case of ports capacities escalating of Pacific coast of Russia and realisation of projects "Continent-Sakhalin", the Transkorean highway and the Transcontinental highway through Bering Strait. With what, actually, the current project of their reconstruction as uniform LSP also is connected.

8. LSP **"Project of a Baikal-Amur Magistral modernization "** is in a commercial operation stage on a starting complex since 1989. It is a "skeletal" railway in a zone of Near-Bam economic development and an element of system BAM - TransSib. It connects the project "Continent-Sakhalin +" with a railway system of Russia.

Reference: The technological doubler of the Trans-Siberian Magistral is considered to be the Mid-Siberian Magistral (a railroad line from Omsk to Taishet: Karbyshevo - Irtyshskoye - Karasuk - Altayskaya - Novokuznetsk - Abakan - Taishet). This highway can be considered also as BAM's natural continuation in parallel the Trans-Siberian Railway (at absence now the North Siberian Magistral). The reason of Mid-Siberian Magistral construction along with other ones was necessity of strengthening «latitudinal line» for export of the Kuzbass coal in western direction. During the different periods of their existence this line at one moment "was amplified" (electrification and two-acceptable inserts) at another "was weakened" in economy stagnation. Now the Mid-Siberian highway plays rather considerable role and in mutual relations of Russia and Kazakhstan since on some sites it passes practically on border of two countries.

Preparation for estimation procedure (the second stage). The further structuring and a situation-standard partial quantification was in two steps.

D u r I n g t h e f i r s t s t e p of the given stage the Table 1 of comparative force of interrelations between analyzed LEP in a current of their life cycles was formed. Interrelations were described in "rough" numerical scale "0, 1, 2, 3". The experts[4] commission filled Table 2 in figures, putting down in cages "0" if communications of pair projects, according to the expert, in their life cycles were absent; "1" if communications were weak; "2" if communications were average force and "3" if communications were strong. After that the given interrelations

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[4] The experts commission consisted of 11 persons from Siberian state transport university and Institute of Economics and Industrial Engineering of the Siberian Branch of the Russian Academy of Sciences entered in it

matrixes were entered into the co-operating objects automatic classification program [5], and by interaction vectors similarity criterion of each object with everyone their clusters came to light. The clusters structure specified on the most probable so-called interaction coalitions at the problem situation representation as competing objects to a choice in investment decisions acceptance.

Table 1

Project Numbers	1.Severosib +Barentskomur	2. CS+	3. TCM	4. SM	5. Trans-Korea[5]	6. UI-UP	7. Transsib	8. BAM[6]
1. Severosib +Barentskomur	3	2	2	1	2	0	2	3
2. CS+	3	3	2	0	2	0	2	3
3. TCM	1	2	3	1	2	0	2	2
4. SM	1	1	3	3	1	3	1	0
5. Trans-Korea[7]	2	1	3	1	3	0	3	1
6. UI-UP	3	0	0	3	0	3	1	0
7. Transsib	2	2	2	1	3	1	3	2
8. BAM[8]	1	3	1	1	2	0	2	3

The results of experts commission work are shown in Table 1. Expert judgments about interrelations of eight LSP were processed by means of the objects co-operating classification automatic program [6]. At alternative modelling calculations when the initial set of objects us broke into different number of classes, splitting into three classes has appeared the best (see Table 1'):

Table 1'

Class number	Classes Structure	LSP Class Name
I	1, 2, 8	Severosib+Belkomur; CS+; BAM
II	3, 5, 7	TCM; TransKorea; Transsib
III	4, 6	SP; UI-UP

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[5] Trans-Korean Railway from station Khasan in Primorsky Kray to Rajin (DPRK)
[6] Total expenses for reconstruction of the Trans-Siberian Magistral and BAM are resulted
[7] Trans-Korean Railway from station Khasan in Primorsky Kray to Rajin (DPRK)
[8] Total expenses for reconstruction of the Trans-Siberian Magistral and BAM are resulted

The splitting acceptability degree by interrelations similarity criterion of "everyone with everyone" was defined from the point of view of possibility (in correspondence with the Card-scheme) substantial treatment of the received result. The revealed classes-sheaves of railway LSP (see Table 1´) we will name further the Megaproject I, the Megaproject II" and the Megaproject III accordingly.

Let's underline: under assumption the realization of all eight LSP within the limits of a situation-standard in the nearest quarter of the century is as much as possible useful for Russia. But it cannot be the fact that it corresponds also to interests of some the ATR countries, including the USA on a number of geopolitical (strategic), ecological and other aspects. More likely on the contrary, at least, today when Russian leadership strengthening in East Asia is considered in the West as the undesirable phenomenon. And all LSP without an exception, as appears from the Card-scheme, directly or is mediated, look on territory and water area of the countries - our neighbours, strong competitors in economic sphere in general and in the transport market in particular. Hence, the conflict of interests in this or that form is inevitable. Its permission is theoretically possible (at simplifying assumptions) in two contexts: As game of Russia with "nature" which is understood as a coalition of the ATR countries which territories contain a part of LSP, and as co-operative game of **n** players with partially conterminous interests.

Further the first case is considered only, the second case is supposed to be considered later in the special publication.

A t   t h e   s e c o n d   s t e p of the second stage the relative priority LSP of our analysis by a method of personal interviews with experts commission members (under in advance developed questionnaire) was established. In a serial scale the expert's individual judgments about every LSP priority from the viewpoint of their importance for Russia came to light. The group relative importance factors (RIF), synthesized by program ORDEX received after numbering of individual judgments of experts, are presented in Table 2.

Table 2

N/N	Railway Megaproject Name	RIF
1	Severosib+Barentskomur	0,07
2	CS+	0,22
3	TCM	0,22
4	PM	0,07
5	TransKorea	0,12
6	UI-UP	0,05
7	Transsib	0,18
8	BAM	0,06

The note. In the column "RIF" of Table 2 the RIF for LSP 1-8 considered as means of Russia utility maximization for each of them are specified. Factors are received after processing the results of examination group by program ORDEX [6, pp. 141-149].

Further, expenses on each of eight LSP are shown in Table 3 resulted below. At calculation of the sums specified in Table 3, their initial sizes resulted in primary sources as an expert estimation (in the prices of corresponding years), were deflated by 2013 also were converted in dollars at an average course 30 roubles per dollar.

The figures shown in Tables 3 testify that the total expenses level under the railway projects make 181-198 billion dollars. It does not look unacceptable neither for Russia, nor for its partners at expenses development term in 25 years[9]. However the world financial crisis complicates a position. Its duration under forecasts can be not less settlement terms of LSP realization that will create problems with steady financing at simultaneous start of all projects. For this reason further it is offered to generate from initial set of LSP clusters-megaprojects, to rank megaprojects by their comparative efficiency and to echelon in time the investment flows each of them according to the revealed priorities.

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[9] Our approximate calculation on a method recommended in [8], shows that the Russian share of expenses on all set of the projects specified in Table 1, will not exceed 3 billion rbl. that makes only the fifth part from the sum (14 trillion roubles), the Russia Railway Transport Development Strategy provided on realization to 2030 [9].

Expenses for the LSP designated on the Card-scheme

Table 3

LSP Name	Value Estimation, billion dollars	Primary Source	Year of Estimation
1. Severosib +Belkomur	15-23	http://expert.ru/siberia/2008/ 16/zhelezhnye_dorogi/	2008
2. CS+	10-15	http://aleksandrovsk-sakh.ru/node/2848	2010
3. TCM[10]	50	http://www.skyscrapercity.com/archive/index.php/ t-464977.html	2012
4. PM[11]	68-78	http://www.opoccuu.com/kurs.htm	2013
5.TransKorea [12]	7-8	http://www.kommersant.ru/doc/1037309	2008
6. UI-UP	12	http://federalbook.ru/files/TEK/Soderzhanie/Tom %209/IV/Proekt.pdf	2007
7. Transsib	19	http://er.ru/news/2013/7/25/putin-provedet- soveshanie-po-rekonstrukcii-transsiba/	2013
8. BAM[13]			

The preparation of the initial information for estimation procedure on it comes to its end. In the course of preparation it is established that expert expenses estimations on compared LSP in certain cases are inequality and can be ranked on the cost-based degree (tactical criterion) both in numerical, and in ordinal scales. And here on the productivity degree (advantage) measured by levels of strategic effects (type "a survival-sustainable development of Russia"), ranking on an ordinal scale can be return, and on a numerical scale (i.e. monetary) is complicated or basically impracticable. The complicating circumstances interfering reception of objective complex estimations, uncertainty factors are. Theoretically they are unremovabled because of system complexity as objects of estimation, and scenarios of development of their Russian and world environment. Nevertheless, uncertainty level can be lowered and, hence, level of reliability the required

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[10] Expenses are accepted on starting (single–track) complex.
[11] The project of the Subpolar Magistral from Salekhard to Uelen by calculations of article authors means; expenses on a site of a highway of Chum-Labytnangi-Salehard-Igarka in volume of 47 billion rbl. in the prices of 1955 [7] (i.e. at the moment of liquidation of the last GULAG point on a line) are not accepted in attention.
[12]Trans-Korean Railway from station Khasan in Primorsky Kray to Rajin (DPRK).
[13]Total expenses for reconstruction of the Transsib and BAM are resulted.

system estimations can be raised, as shown below with use of the system analysis leaning in turn to expert technologies.

Estimation procedure. In the strategic games technique with "nature" [10], [11] the estimation scheme when the operating player Russia (further - the Configurator) chooses the most preferable strategy from set, creating by Megaprojects I, II, III was applied. The player "nature" in such scheme is understood as a prospective coalition of the countries (further - the Coalition) on which territory the LSP railway lines of Megaprojects specified structure (see the Card-scheme and Table 2′) pass.

The Coalition interests in sector of rail transportation are considered basically not opposite to Russia interests. But the Coalition *actions* are identified with the player "nature" are badly predicted and can be realized with different probability scenarios for Russia in a range of "favorable - adverse".

Let's pass to the description of estimation procedures by means of semiformal system analysis models and formal economic-mathematical models.

The following sets are given by Configurator for decision-making model construction:

X — Set of the admissible alternatives: Megaprojects I, II and III;

Y — Set of the project environment possible conditions: optimistic, pessimistic and the most probable scenarios;

S — Set of the possible outcomes: pair "alternative - scenario";

U — Set of the outcomes estimation criteria;

E — Set of the purposes of Megaprojects.

The set X includes alternatives of the Megaproject I, Megaproject II and Megaproject III.

Elements of the set Y are described aggregated, in the form of scenarios-contrasts of the Megaprojects environment development reflecting the Coalition investment policy.

From the Configurator viewpoint the scenario (further - **Scenario L**) in which expenses on all Megaprojects are incurred by the Coalition within the limits of the contract on long-term concession is **optimistic**. We note that such variant is possible, if Russia liberalizes their concession legislation which, in our opinion, is now confiscatory.

From the Configurator viewpoint the scenario (further - **Scenario P**) in which the Coalition incurs expenses on all Megaprojects only regarding those sites of Megaprojects which are realized in territories of the Coalition countries-members is **pessimistic**. Such variant is real in case if Russia does not wish to liberalize their concession legislation.

And, at last, **the most probable** from the Configurator viewpoint is **Scenario N** which assumes that mutually acceptable interests coordination institutes for the Russia and the Coalition participants will be found. Such institutes will allow to carry out a sharing the benefits and expenses between them effectively and fairly on the Megaprojects systems realization.

It is supposed the outcome is completely defined by a choice of alternative and environment condition. Then to each pair $(x, y) \in X \times Y$ there corresponds a certain outcome $s \in S$. In other words, there is function $F: X \times Y \to S$ which is called as realization function. It is necessary, since communication between alternatives and outcomes generally is not determined; the result of alternatives realization (outcome) depends on an uncontrollable environment condition. In other words, there is an exogenous strategic uncertainty as consequence of the environment influence to alternative. Therefore at a purposes estimation alternatives achievement of the Megaprojects it is necessary to consider values of uncontrollable variables: scenarios of the environment development, reflecting possible variants of the Coalition policy.

Set <X, Y, S, F> - realization structure of the decisions investment acceptance problem. Depending on what information is accessible, in the theory the problems in the definiteness conditions, risk (probabilistic indefiniteness), radical (not

probabilistic) indefiniteness and subjective indefiniteness (in conditions of conflict - cooperation) differ. Below the case of the radical indefiniteness only which adequate to described above problem situation of game with the nature will be considered.

Further. The set <U, E> forms *estimated structure* of the decision investment acceptance problem. The realization structure defines an outcome of interaction of pair «alternative - environment condition», and the estimated structure provides an estimation of this result [12]. Elements of set U are functions which compare to each outcome the value of *estimated indicators*. The purposes of set E generally specify directions of desirable changes of these indicators.

In our case in the statement the set of purposes E consists of one purpose *e* - to reach a maximum of utility function for Russia (accepted equal to 1) from realization of each of three Megaprojects to the east of Ural. And then to order Megaprojects according to criterion U - degree of achievement of the purpose *e*, provided to each of them (i.e. measured in unit shares of a possible maximum).

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Taking into account the above information in the statement, structurization and partial quantification the problems of a choice by Configurator-Russia the most preferable Megaproject (further - alternatives) let's formalize a problem as a task of strategic game with "nature". Then the alternative choice is carried out on the basis of preliminary constructed estimations $f(x, y)$ each alternative x in the conditions of each scenario y. Let's assume that sets X and Y are finite:

$$X = \{x_1, \ldots, x_m\}, \ Y = \{y_1, \ldots, y_n\}.$$

Let's put $u_{ij} = f(x_i, y_j)$. Then the results of alternatives estimation can be reduced in *estimated matrix* A = (u_{ij}) dimensions m×n. The elements of this matrix are outcomes estimations (by integral criterion) corresponding to all possible pairs <alternative - scenario>. A profile of alternative estimations x_i name a vector $(u_{i1}, \ldots, u_{in})$.

The most common criteria of a preferable alternative choice x_{i*} (or that the same, numbers *i**) are on an estimated matrix in a situation of radical indefiniteness when probabilities estimations of scenarios are unknown or have no sense, so-called global criteria (or rules) Hurwitz (and its modifications) and Savage. In a situation of stochastic uncertainty (risk) when the realization probabilities estimations of scenarios are known, it is applying a rule of Bayes.

1. Hurwitz's rule with parameter $\lambda \in [0, 1]$:

$$i^* \in \operatorname{Arg} \max_i [\lambda \min_j u_{ij} + (1-\lambda) \max_j u_{ij}]. \tag{1}$$

Here the parameter λ can be interpreted as a care measure of the person, making the decision. For each alternative it is easy to define a values interval (probably, empty) λ at which it is the best by Hurwitz's rule. The special cases of a rule of Hurwitz are a rule of Wald ($\lambda = 1$) and a rule of "extreme optimism" ($\lambda = 0$).

2. Rule of Wald:

$$i^* \in \operatorname{Arg} \max_i (\min_j u_{ij}). \tag{2}$$

This rule reflects installation of the careful investor not inclined to risk. Chosen thus the *maximin alternative* x_{i*} maximizes guaranteed (at the most adverse scenario) result.

3. Rule of extreme optimism:

$$i^* \in \operatorname{Arg} \max_i (\max_j u_{ij}). \tag{3}$$

This rule is comprehensible for the investor inclined to risk. Choosing *minimax alternative*, he counts on the most favorable scenario realization.

4. Rule of Savage:

$$i^* \in \operatorname{Arg} \min_i (\max_j c_{ij}), \text{ где } c_{ij} = \max_k u_{kj} - u_{ij}. \tag{4}$$

Here c_{ij} - the deviation of an alternative estimation x_i at the scenario y_j from an estimation of the best at this alternative scenario - is interpreted as risk or "regret". The rule chooses alternative of "minimax regret" which minimizes the maximum risk. The profile of estimations of this strategy is minimum deviates of

the profile of estimations of the hypothetical "ideal" alternative which estimation in each scenario is equal to the maximum estimation, achievable in this scenario by strategies from X.

5. Rule of Bayes:

$$i^* \in \operatorname*{Argmax}_{i}\left(\sum_{j} p_j u_{ij}\right), \tag{5}$$

where p_j– estimations of the scenarios probabilities satisfying to conditions

$$p_j \geq 0, \ \sum_{j} p_j = 1. \tag{6}$$

The condition (6) demands, that the set of scenarios was full in the sense that set Y should include the all possible environment conditions. Estimations of the scenarios probabilities as a rule, are defined by experts. If scenarios are equiprobable, the rule of Bayes turns to a rule of Laplace.

6. Rule of Laplace.

$$i^* \in \operatorname*{Arg\,max}_{i} \frac{1}{n} \sum_{j} u_{ij} = \operatorname*{Arg\,max}_{i} \sum_{j} u_{ij}. \tag{7}$$

This rule is named also a rule of "insufficient basis": if about environment development scenarios realization probabilities it is not known, assume (quite often without the sufficient bases) that they are equiprobable.

There are also others (less often used) decision-making rules in the conditions of indefiniteness: Hodge-Lehmann, Kaufmann, Germeier, a rule of multiplications, a rule of the maximum probability of the value level given, Hurwitz's generalized criterion [12].

The listed above rules (1-7) formalize different systems of preferences on set of alternatives, therefore they select, generally speaking, different alternatives. Making of the decision, the Configurator - Russia can use that rule which to the greatest degree corresponds to its preferences.

Numerical calculation. For procedures clearness which are carried out at transition from the formal choice model to numerical one, we interpret in Table 4 format the estimated matrix $A = (u_{ij})$ dimensions $m \times n$, entered earlier.

Numerical Estimated Matrix

Table 4

Alternatives	Scenarios *Y* as set of conditions of the player "nature"		
	Scenario *L* y_1	Scenario *N* y_2	Scenario *P* y_3
Megaproject I x I	0,350	0,070	0,017
Megaproject II x II	0,520	0,010	0,016
Megaproject III x III	0,12	0,006	0,003

Let's begin with "numbering" the function $u_{ij} = f(x_i, y_j)$. It is the function of two variables - alternative x_i and scenario y_j. Having addressed to Tables 1, 2, and 3, we will generate Table 5 in which cages we will place a *simple* variant of the given function in shape

$$u_{ij} = x_i,/y_j), \qquad (8)$$

that is admissible at approximately identical scale of compared Megaprojects [13]. Then x_i in numerator (8) means degree of the purpose achievement by *i* Megaproject, and y_j is the expenses on it, depending on the possible behavior of Coalitions reflected in scenarios L, N and P (see Table 4).

Let's describe algorithm of an indicator formation (the game price) u_{I3} for pair **"Megaproject I - Scenario P"**. x I - the utility indicator is calculated on the Table 3. The large-scale projects 1, 2, 3 with their utilities, in the sum makes 0,07+0,22+0,06 = 0,35 compose in a **Megaproject I** (see Table 2 ´). Total projects 1, 2, 3 cost degree - the indicator y_3, estimated on Table 1, makes 41 billion dollars. On conditions in **Scenario P** - pessimistic, the Coalition will incur half of expenses only, i.e. about 20 bln. dollars Then specific utility on billion expenses of the **Megaproject I** in **Scenario P** will be defined as:

$$u_{I3} = 0,35/20 = 0, 0175.$$

Operating similarly, all other elements of a numerical estimated matrix are defined and it takes Table 4 form.

Already the visual analysis of the Table 4 shows that the Megaproject III is dominated by two other Megaprojects and consequently it is a closing variant. The numerical analysis of not dominated Megaprojects I and II has yielded the following results.

By criterion of Wald the Megaproject I has appeared the most preferable. By criteria of Savage and extreme optimism the best is the Megaproject II. By Hurwitz's criterion and $\lambda = 0,66$ best there was again a Megaproject II. By criterion of Bayes and presumable probability of actualization of Scenarios L, N, P {0,1; 0.5; 0,4} the Megaproject I is accordingly most preferable. The criterion of Laplace specifies that the best is the Megaproject II.

Results of the analysis are shown in Table 5.

Table 5

Megaprogects	Criterios					
	Wald	Savage	Maximax	Hurwitz	Bayes	Laplace
I	+				+	
II		+	+	+		+

The comment of the results obtained. From the formal-mathematical viewpoint the result of an estimation is ambiguous: by different criteria the different Megaprojects are in a role of the most preferable. Moreover, the analysis of the spent estimation results on sensitivity to factor changes λ in Hurwitz's criterion and a vector of scenarios actualization probabilities in criterion of Bayes has shown stability of the made (ambiguous) estimation in a wide range of the specified parameters changes. Hence, the investment decision or (that is more exact at the given stage of its acceptance) the concrete definition of investment intentions of the Configurator, should lean on its own system of values considering the Coalition values system. The final plot of present article is devoted to discussion of the aspect of a problem.

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Elements of the games theory, the target forecasting, the cluster analysis and expert technologies have found application in the present article as tools of the complex problem system analysis. Their use has allowed to overcome an "incommensurability barrier" when the results and expenses on each Megaproject are expressed in the different units and scales. However, as it has appeared, the system analysis methodology focused on revealing of the benefits and expenses balance, maximizing return of the spent means and applied in our case, cannot ensure an univocal comparative estimation of this or that Megaproject. The Tables 5 data testify it: the different Megaprojects appear the most preferable by different criteria of decision-making in uncertainty and risk situations. Therefore, despite the done work, they represent incommensurable alternatives. But the univocal estimation is necessary to the Configurator for decision-making. And here there are two ways.

T h e   f i r s t   w a y   is as follows: the Configurator aspires to receive a required estimation by means of the same tooling of the system analysis founded on experts group judgments which technique already has been applied earlier, and its tools are listed above. It means that the Configurator or does not hope for the own competence, or in case of an unsuccessful estimation and the unsuccessful decision made on its basis hopes to avoid a private responsibility.

This way consists in designing of the generalized criterion which components are the particular criteria listed in Table 5. Linear convolution of particular criteria with the shares defined by experts, gives the generalized (scalar) criterion. The most preferable Megaproject [14] is defined on its basis.

T h e   s e c o n d   w a y   is offered in [8]. Its author considers that if by means of the system analysis 1) the problem is accurately put, 2) all major kinds of expenses and benefits are revealed, 3) achievable combinations of expenses and benefits are defined, the "analyst should stop", having executed all three points. It is considered that thus by means of the system analysis the strong basis is created

for the Configurator when it has an opportunity, having released from draught and in a certain extent routine work in sphere of numbers, to function creatively in sphere of values.

Then the Configurator problem is to commensurate incommensurable, i.e. to interpret the values of Russia so that ranging of incommensurable alternatives-Megaprojects would be congruentially to these values. To formulate in a general view a steady valuable number of modern Russia is inconvenient, because the country is many years in a condition of system transformation and system of values is labile and quite often inconsistent. For this reason we will use the universal Parsons values definition [15]. And we will consider it as working definition, suitable for our case, at least for the reason that actually all considered Megaprojects by definition are realized together with foreign participants. And the Configurator values system should be necessarily coordinated with them.

The value on Parsons is firm higher principles on which basis the *consensus* both in small public groups, and in a society as a whole is provided. Together with generality[14] and universality[15] postulates this definition, in our opinion, is fair and at interstate level that is especially important in our case.

Particularly, well-founded estimation of Megaprojects I and II by the Configurator is possible, if it can confidently predict behavior of the Coalition, assuming that the system of values of its members and the Coalition as a whole corresponds to Parsons's understanding. Naturally, the Configurator should adhere to these principles by definition and think rationally.

In the light of the told let look at the Table 5. If the confidence takes place, the Configurator prefers the Megaproject I since it, on the one hand, is most preferable by criterion of Bayes that speaks about predictability of behavior of the Coalition in probabilistic sense. On the other hand the Megaproject I also is preferable by

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[14] "Validated that is accepted co-operating subjects (individuals or communities), promotes stability of their relations and a mode of life, mutually acceptable development" [16].

[15] Recognizing the right behind itself, recognize it and behind others; making duties to another, carry out it yourself " [16].

criterion of Wald that specifies in care, disinclination to risk of the Coalition, i.e. its reliability as the partner.

If the confidence is not present, the Configurator prefers the Megaproject II as it is most preferable by criteria of Savage, Maximax, Hurwitz and Laplace formulated for a case when the Coalition behavior though is not malicious, but is unpredictable. The Configurator in this case can not adhere to system of values of Parsons. But it is obliged to estimate a situation rationally.

And the last. We will explain the motives which have induced authors to write the present text. In article beginning these motives have been cleared partially, tasking. Leaning on written, we will try to give their deeper interpretation.

Let's begin with the term the Configurator. Usually in the theory of strategic games this player is called as the Statistician or the Analyst. Naming the Russia as Configurator we wanted to underline that if to realize its "transit" potential by means of realization of those LSP about which it is told in article, there will change (and considerably) a configuration of the transport market in a geostrategic triangle of the XXI-st century "America - Europe - the countries of South East Asia". There will be an overland railway alternative to sea carriers. And transportation of cargoes and passengers on edges-routes of this triangle will pass on territory of Russia. And with the high-speed railway transportation development it will make a competition to air carriers too.

Clearly, from competition strengthening in the market of transport services will win all world community in the economic plan. But there is also a strategic aspect of discussed large-scale railway construction. If to address to the history which, as it is known, has no subjunctive mood, but learns much, becomes obvious: if Great northern Railway (GNR) in the beginning of the last century has been constructed, the Second World War in general could not to be. Hitler, of course, was the international criminal and the adventurer, but a fool it was not. And, if to the beginning of 40th years of the last century GNR already worked not less than 25 years, providing steady railway communication of the USSR and the USA, Nazis

had to consider so important strategic factor. And if, illogically, they nevertheless have untied war, it would be more transient and not such bloody.

If, having acquired past lessons, to address to today it is possible to see some analogy between "yesterday" and "today". Only now in difference from 30-years of the last century the international terrorism, not fascism, is growing very fast. It is not excluded that terrorists pass on the international sea communications and even will block Suez and Panama channels. Here then transport corridors about which it is told in an article epigraph and which rod structures are our Megaprojects, will play a role of the rear belt roads communications along a front line of war with terrorism. So the arrangement of corridors will do well not only Russia, but also to the world community, first of all in the name of those countries which in our model form the Coalition.

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