

#33

“Loyalty Program” tool application in megaprojects

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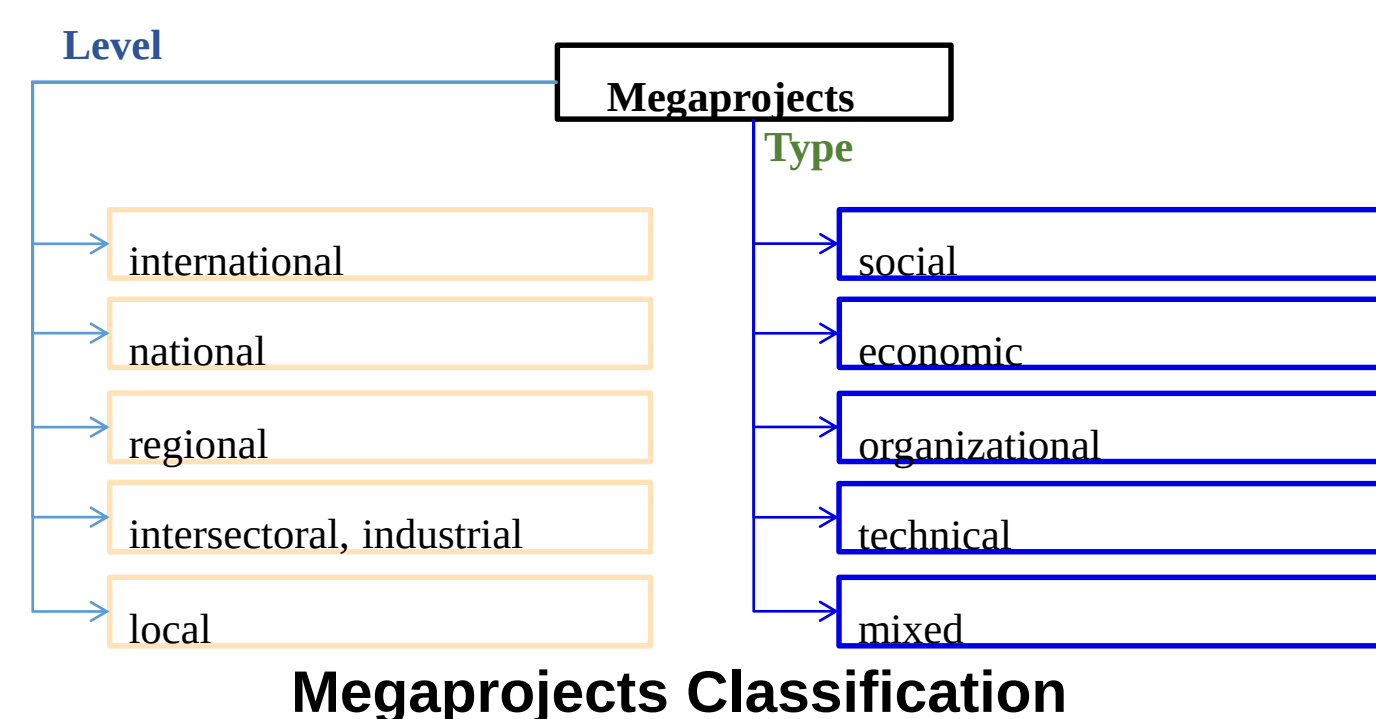


Introduction

The variety of project variations has led to the need to classify them according to the most important characteristics:

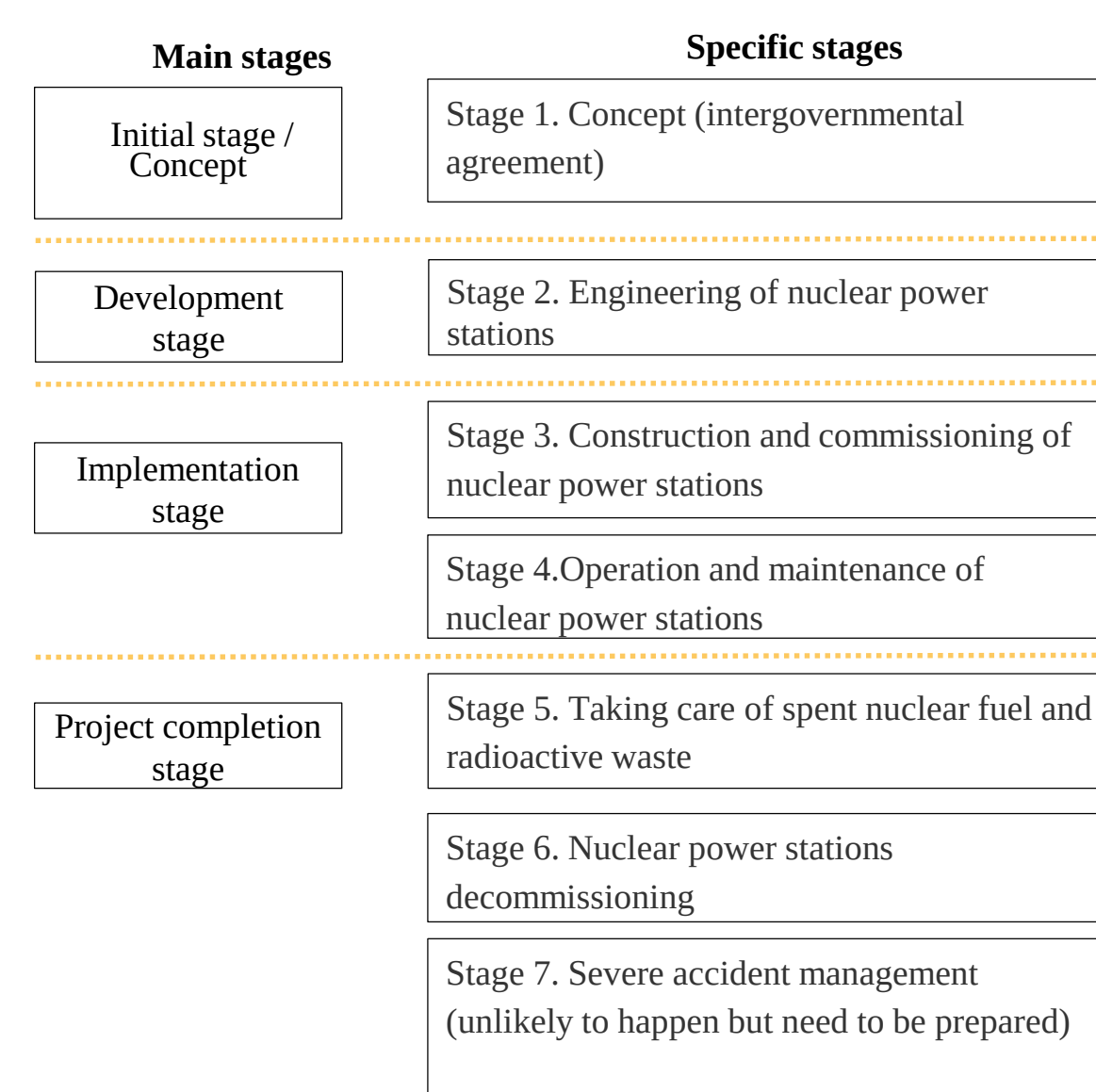
- megaprojects;
- multiprojects;
- monoprojects.

Megaproject is currently understood as an investment project of an extremely large size. Megaprojects are classified by the levels of programs and by their type.



Analysis of measures to increase loyalty in the megaproject implementation

Classical project management implies a project life cycle consisting of four main stages: the initial stage or concept, the development stage, the implementation stage, and the completion stage. For each megaproject, it is necessary to allocate detailed specific stages which are characteristic only for this particular megaproject.



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Stage 3. Implementation:

- create the necessary national legislative framework;
- work on the development of nuclear and power infrastructure;
- retrain national personnel;
- arrange the production of the necessary equipment on the customer-country territory;
- guarantee fuel supply for the entire life cycle of nuclear power stations;
- provide a nuclear and radiation safety system, develop an emergency preparedness and response system;
- create opportunities for development;
- ensure the acceptance of nuclear energetics by the public.

Stage 4. Project completion:

- work on the development of nuclear infrastructure;
- retrain national personnel;
- service, reprocess and handle spent nuclear fuel;
- develop the comprehensive solutions on decommissioning of nuclear power stations;
- ensure the acceptance of nuclear energetics by the public.

Determination of loyalty program structure of megaproject by applying mathematical tools

Evaluation of existing classic loyalty programs can be easily made based on data collected on purchases of regular and new customers. By contrast, such an analysis is not possible when it comes to a megaproject because the megaproject is usually unique, requires a huge amount of financial costs, and can be implemented only once.

One of the most relevant tools is expert assessment of information - T. Saati hierarchy analysis method.

To obtain a single assessment based on several individual assessments, we use mathematical tools. It is proposed to use as a consolidated estimate the value obtained using Bayesian method.

The application of the Bayesian method can be described in the following steps:

1. Construct an m × n dimensional matrix of estimates for n elements from m experts

$$X = \begin{bmatrix} x_1^1 & \dots & x_n^1 \\ \dots & \dots & \dots \\ x_1^m & \dots & x_n^m \end{bmatrix}$$

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2. Calculate arithmetic mean values of estimates for each element

$$\overline{x^{(A)}} = \frac{1}{m} \sum_{i=1}^m \overline{x^{(i)}} = \left(\frac{1}{m} \sum_{i=1}^m x_1^{(i)}, \dots, \frac{1}{m} \sum_{i=1}^m x_n^{(i)} \right) = (\overline{x_1^{(A)}}, \dots, \overline{x_n^{(A)}})$$

3. Calculate the variance of individual assessments of each expert in relation to the arithmetic mean value of the experts' assessments set

$$\sigma^{(i)2} = \frac{1}{n-1} \cdot \sum_{j=1}^n (x_j^{(i)} - \overline{x^{(A)}})^2$$
$$w^{(i)} = \frac{1/\sigma^{(i)2}}{\sum_{i=1}^m 1/\sigma^{(i)2}}$$

4. Calculate the sum of the inverse values of all experts' variances

5. Calculate the weight of expert's estimates for all experts

6. Calculate more accurate estimates of each element's significance as an average weighted estimate, taking into account the different error level in experts' estimates

$$\overline{x_j^{(B)}} = \sum_{i=1}^m w_i \cdot x_j^{(i)}$$

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	ED	NTD	NPD	NESD	IE	BQL	SRT	IC	IT
Education Development (ED)	1,00	3,00	2,00	0,50	0,33	0,50	5,00	4,00	5,00
New technologies development (NTD)	0,33	1,00	0,50	0,33	0,25	0,33	3,00	2,00	3,00
New professions development (NPD)	0,50	2,00	1,00	0,50	0,25	0,20	6,00	5,00	6,00
New economy sectors development (NESD)	2,00	3,00	2,00	1,00	0,25	0,20	6,00	5,00	6,00
Increasing Employment (IE)	3,00	4,00	4,00	4,00	1,00	0,50	7,00	6,00	7,00
Better quality of life achievement (BQL)	2,00	3,00	5,00	5,00	2,00	1,00	8,00	6,00	8,00
Seminars, round tables, etc. (SRT)	0,20	0,33	0,17	0,20	0,14	0,13	1,00	0,25	0,33
Information Centers (IC)	0,25	0,50	0,20	0,20	0,17	0,17	4,00	1,00	3,00
Information Tours (IT)	0,20	0,33	0,17	0,17	0,14	0,13	3,00	0,33	1,00

The table shows the results of a paired comparison by an expert on the sensitivity of the stakeholder category "public" to possible measures to increase loyalty

Element of the loyalty program	Relative importance (weight)
Education Development (ED)	0,119
New technologies development (NTD)	0,058
New professions development (NPD)	0,091
New economy sectors development (NESD)	0,129
Increasing Employment (IE)	0,240
Better quality of life achievement (BQL)	0,281
Seminars, round tables, etc. (SRT)	0,019
Information Centers (IC)	0,038
Information Tours (IT)	0,024

This matrix of expert's judgments is consistent (C.R. = 7.4%). Therefore, the data obtained on its basis are suitable for subsequent analysis.

Conclusion

•The main feature of megaprojects is their exclusivity and individuality. Such projects are valuable not only for the investors but also for the part of society that directly or indirectly receives a wide variety of new benefits.

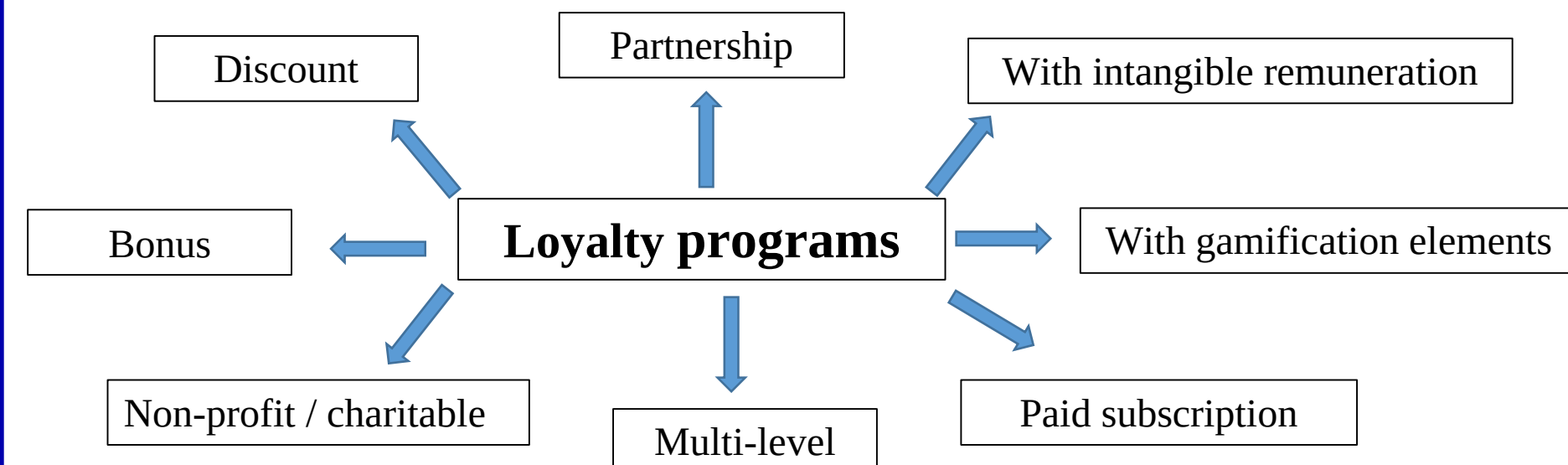
•In addition to commercial significance, such projects can have strong positive effects: social, tax, budget, environmental, and technological.

•Analysis of the loyalty program possible components, accomplished using expert assessments based on T. Saati hierarchy analysis method, allows us to prioritize correctly all activities and to determine the funding structure.

Loyalty program

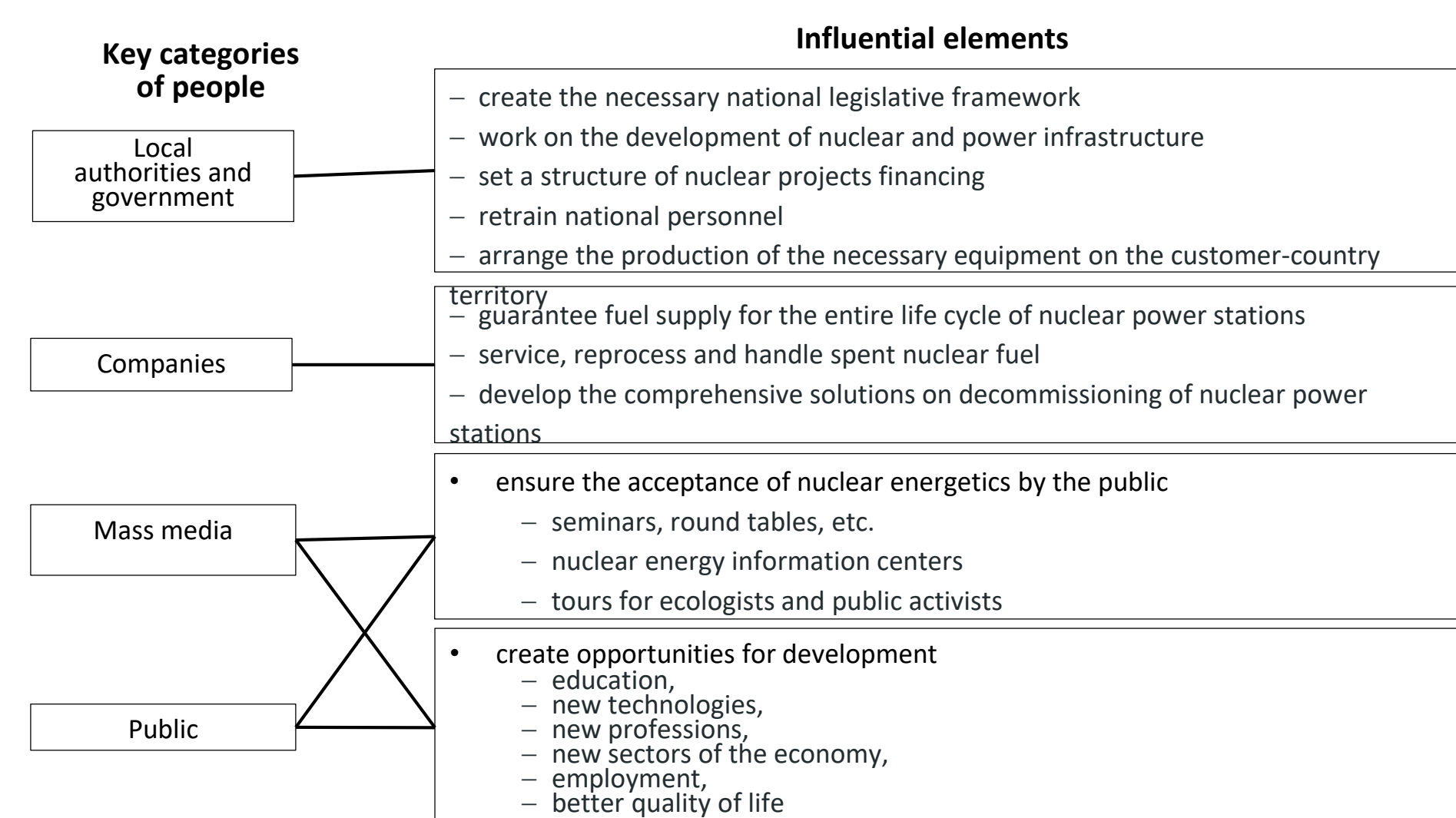
“Loyalty” is a faithful, trustworthy attitude towards someone or something

A loyalty program in the business environment means a set of measures aimed at increasing the attractiveness of a company's goods or services



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Analysis of measures to increase loyalty in the megaproject implementation



Stage 1. Initial stage or concept:

- make a fundamental decision on the construction of a nuclear power station;
- create a concept for the development of nuclear and power infrastructure;
- set a structure of nuclear projects implementation financing,
- ensure the acceptance of nuclear energetics by the public.

Stage 2. Development:

- create the necessary national legislative framework;
- work on the development of nuclear and power infrastructure;
- implement the structure of nuclear projects financing;
- retrain national personnel;
- ensure the acceptance of nuclear energetics by the public.