

## THE USAGE OF R&D STATE REGISTER FOR THE PURPOSES OF TECHNOLOGICAL FORECASTING

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Organization can implement new product's technical preparation yourself or by the means of R&D state register. The second way reduces the cost and time involved. However, there is a need to develop a R&D with certain characteristics ranking methodology.

According to the methodology, the assessment should be based on the following criteria: the research direction's prospects; the new technology's potential within the chosen direction; R&D's performers specialization. The proposed methods for promising R & D selection with the aim of a new product development: a) target requirements' analysis and assessment as well as the formation of R&D data subset from the state register according to the identified target requirements; b) a set of innovative projects' evaluation indicators calculation; c) selected target groups' key elements edification which obtain the largest amount of innovative potential and activity; d) innovation process' key objects selection; e) definition of connections between key objects.

**A) Target requirements' analysis and assessment as well as the formation of R&D data subset from the state register according to the identified target requirements.** The information array of R&D data from the state register data based on classified characteristics is formed. The methodology provides for an assessment based on the following criteria: significance, intensity and frequency of mention. The criteria for significance is a scientific direction's elaboration level. The intensity assessment will be investigated within the framework of the previously defined direction, namely, determined by the number of scientific works in a certain direction. A frequency mentioning factors analysis in the total population clearly shows the intensity of the efforts within the chosen direction of scientific activity.

**B) A set of innovative projects' evaluation indicators calculation.** To assess innovation development in the framework of the target group identified at the previous stage, we may use the concepts of innovation activity (IA), innovation potential (PI) and a composite indicator of the prospects for innovation development (SPID):

$$SPID = \sqrt{IA \cdot PI}$$

IA is defined as the proportion of R&D within the selected grouping feature, in the total number of R&D performed for a certain sample:  $IA = \frac{Q_i}{Q}$ , where  $Q_i$  is the number of R&D selected from a certain sample by a certain criterion  $i$ ;  $Q$  is the total number of R&D in some sample.

IP is defined as the R&D share within the selected feature of the grouping in the total gross volume of R&D in value terms:  $PI = \frac{F_i}{F}$ , where  $F_i$  is gross turnover of R&D in value terms, selected from a sample by a certain criterion  $i$ ;  $F$  is the total gross turnover of NIOC (T)P of a certain sample in value terms.

**C) Selected target groups' key elements edification which obtain the largest amount of innovative potential and activity.** The IA value allows to judge whether the innovations correspond to a certain stage of innovative development (a specific R&D or their combination selected by a certain criterion, for example, by region or priority direction of scientific and technical activity, etc.), and IP characterizes the state of this stage. We single out the following stages of innovation development: the birth, formation, development, and stagnation. Moreover, each of these stages exists in one of the following states: onset, intensive development, rich development, fading development. Grouping involves identifying the range ( $R$ ) of the intensity of the trait:

$$R = X_{\max} - X_{\min}$$

where  $X_{\max}$  – the maximum value of the trait intensity;  $X_{\min}$  – the minimum value of the trait intensity. Next, you need to determine the length of the grouping interval ( $h$ ):  $h=R/n$ , where  $n$  is the groups number into which the population is to be divided. Conventionally, we assume that the distribution will be linear. Since the maximum possible value of PI and IA is 1 (100%), and the minimum is 0%, the span will be equal to 100%. When grouping the above indicators into four groups, the interval will be equal to 25%. The R&D group with a high IP has prerequisites for moving to the next, higher stage of innovative development. A group with a low PI may be at a previous stage of development, since a low PI shows a slowdown in development.

**D) Innovation process' key objects selection.** On the basis of the samples obtained and the calculations made, an assessment of the prospects for innovation is made. At the same time, it is obvious that (with the equality of other parameters), the results of R&D, which do not require modification for their practical use, should be in the greatest demand. On this basis, it can be argued that R&D, brought to the stage of possible use in mass production, will have greater attractiveness for investors.

**E) Definition of connections between key objects.** In the process of research, a mechanism was developed to regulate the interaction between participants in promising industries in the form of technological platforms. It contains organizational and legal measures for the R & D commercialization. An exceptional feature of the developed mechanism is the consideration of risks and vulnerabilities associated with the introduction of R & D results into civilian circulation, and due to the requirements of the legislation and the practice of its application. The above-described method allows you to create evaluation criteria that will improve the economic methods of managing new product.

The application of this method will allow to optimize work with the R&D state register and to assess the prospects of using their results for the purpose of innovative development.