



NATIONAL RESEARCH
UNIVERSITY

LONG-TERM FORECASTING OF S&T AND INNOVATION INDICATORS

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Current practices of forecasting S&T and innovation in Russia

- 1) Research is focused on particular (not general) problems
- 2) Relationships between the parameters of development of national innovation system (NIS) and the macroeconomic indicators are often not taken into account
- 3) Interactions between NIS elements are often not taken into account
- 4) Domination of quantitative methods
- 5) Lack of an integrated approaches
- 6) Focusing on traditional economic criteria and quantitative estimation



Problems of S&T and innovation forecasting in Russia

- 1) Existing approaches provide limited contribution to policymaking
- 2) Lack of integration with the overall system of socio-economic forecasting
- 3) Underestimation of systemic effects of NIS development
- 4) Lack of use of qualitative characteristics
- 5) Insufficient coherence of required resources and envisaged results
- 6) Integrated estimates are difficult to achieve on the basis of existing practices
- 7) Limited opportunities for assessment on potential social effect



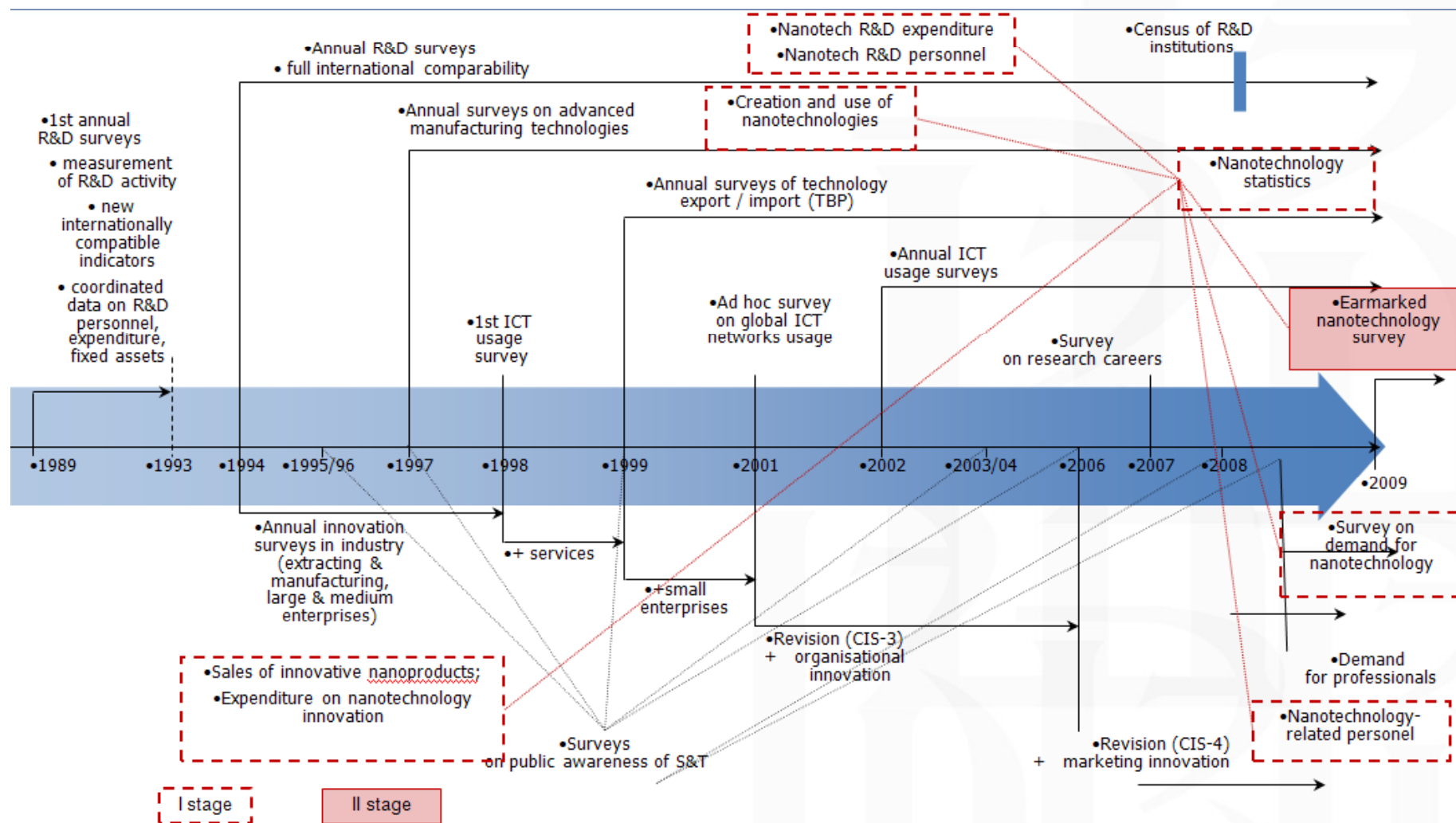
System of forecasts of development of science and innovation system in Russia

- Concept of long-term socio-economic development of the Russian Federation till 2020
- Main parameters of the forecast of socio-economic development of the Russian Federation for 2020-2030 years
- Basic directions of activity of the Government of the Russian Federation
- Concept of the long-term forecast of S&T development of the Russian Federation till 2025.
- Strategy of the Russian Federation in the field of science and innovation development till 2015
- Federal targeted programme “Research and development in priority S&T area” for 2007 - 2012
- Targeted programmes of government agencies
- Long-term and medium-term sectoral strategies
- Reports on results and the basic directions of activity of the subjects of the budget planning.



Macroeconomic forecasts +
S&T and innovation forecasts

S&T statistics in Russia progress



Unified system of forecast calculations

ORGANIZATION

- 1) Integrated methodological approach
- 2) Integrated complex of models
- 3) Integrated information base

METHODOLOGIES

- 1) Consistency of volume and structural indicators of NIS development with macroeconomic forecasts and relevant resource indicators
- 2) Methods to Increase of reliability and validity of developed forecasts
- 3) Systemic approaches
- 4) Targeting demand for planning and management in S&T and innovation
- 5) Forecasting resource indicators for planned policy goals

New approaches

1)

- Integration of quantitative and qualitative methods (expert assessments, methods of statistical modeling and forecasting and Foresight methodology)

2)

- Use of international statistical standards of the System of National Accounts

3)

- Adaptation of modern methods of assessment the performance of NIS

4)

- Creation of an easily renewed and updated information base

Envisaged results

1)

- Forecasts of major parameters of S&T and innovation

2)

- Trajectories of achievement of target indicators

3)

- Forecasts of performance parameters

4)

- Forecasts for resources to be provided

Analysis and systematization of international experience

Conceptual apparatus :

- the recommendations of international organizations

Hypotheses on the relationship of NIS elements

Methodological approaches to the complex forecasting:

- multi-factor models
- formalized methods of forecasting
 - matrix models
- specialized methods and models

Identification of the object of forecasting :

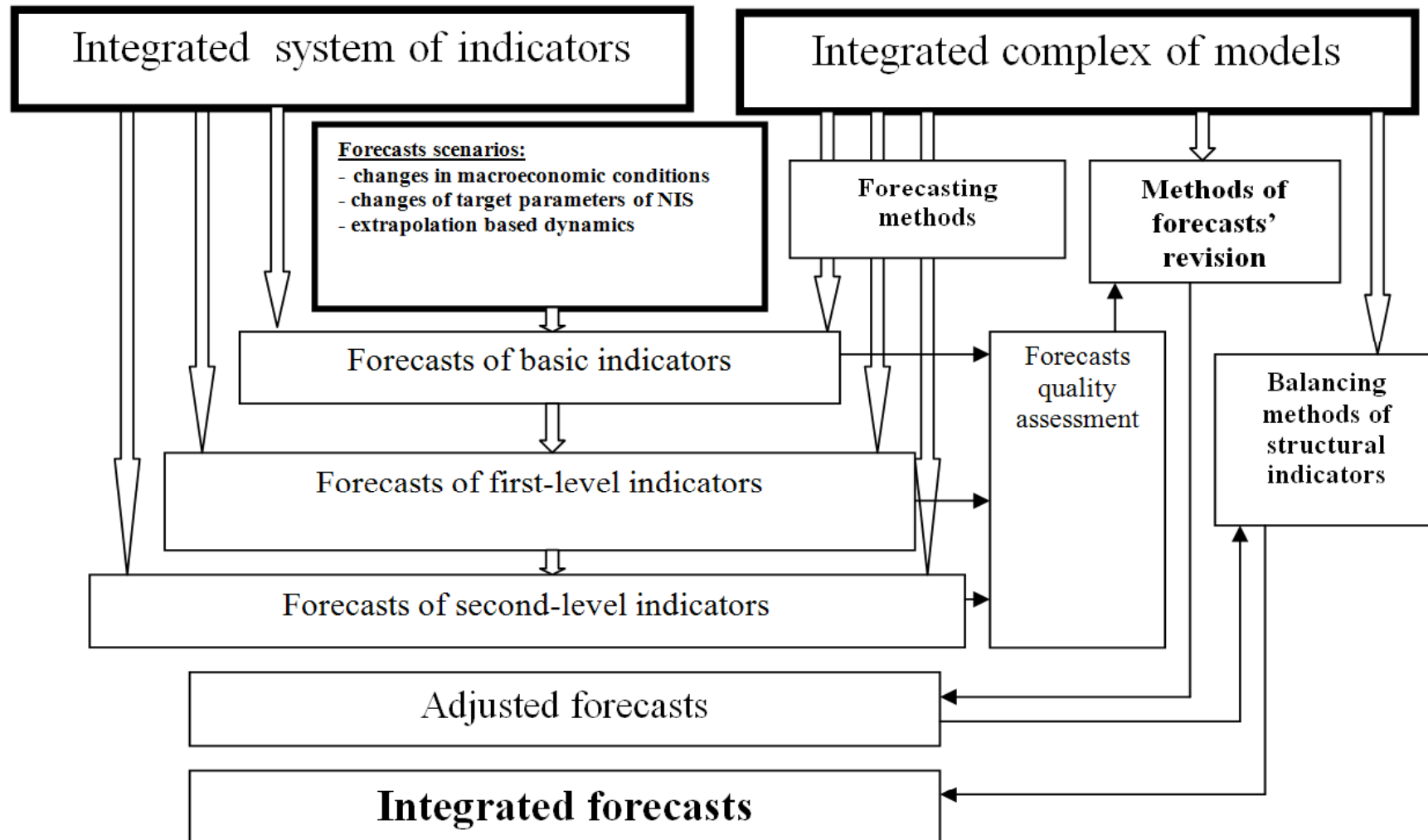
- the institutional structure of NIS,
- functional structure of the NIS,

Approaches to analysis and forecasting NIS elements

Structured system of indicators:

- Eurostat database
- OECD database

Major steps of forecasting

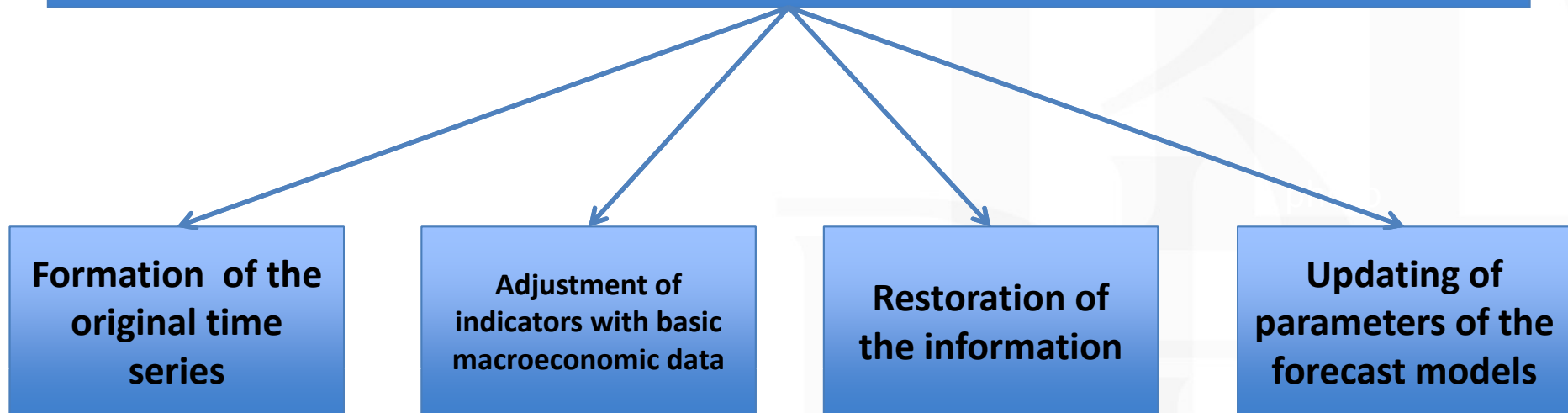


Information base

Statistical data



HSE Information-analytical system “Statistics and monitoring of economics of knowledge: science, innovation, education, information society”



Macroeconomic indicators

- 1) GDP
- 2) Federal budget revenues
- 3) Federal budget expenditures
- 4) Investments in fixed capital
- 5) Volume of industrial production
- 6) Exports of goods and services
- 7) Profit for all activities
- 8) Allowances for depreciation (for all enterprises)
- 9) Wages
- 10) Nominal gross average monthly wages per one employee

Indicators of S&T sector

Input indicators

- 1) Number of organizations involved in R&D units
- 2) Number of employees engaged in R&D
- 3) Number researchers
- 4) Average annual value of fixed assets of R&D organizations
- 5) Gross domestic expenditure on R&D
- 6) Share of domestic expenditure on R&D in GDP
- 7) Allocations for civil science from the federal budget

Output indicators of science sector

- 1) Volume of work performed on research and development
- 2) The average monthly salary of R&D personnel
- 3) Granted patents for inventions with an indication of Russia
- 4) Granted patents for useful models with an indication of Russia
- 5) Number of scientific papers published by Russian authors
- 6) Share of scientific papers written by Russian authors in the international co-authorship
- 7) Total citation index of scientific papers written in Russian
- 8) The share of scientific papers written by Russian authors, in world number of scientific papers

Indicators of innovation sector

Input indicators

- 1) Expenditure on technological innovations (TI)
- 2) Number of organizations performing TI
- 3) Share of organizations performing TI, in total number of industrial organizations
- 4) Number of R&D departments in organizations performing TI
- 5) Number of employees in these units

Output indicators

- 1) Volume of shipped innovation production
- 2) Share of innovative production in the total volume of industrial production
- 3) Volume of export of innovative products, works, services
- 4) Share of export of innovative products in total volume of exports of goods and services
- 5) Revenues from the export of technologies
- 6) Number of created advanced technologies
- 7) Number of used advanced technologies

How the forecast results can be used

- Adjustment of integrated forecasts of S&T and innovations to changes in macroeconomic conditions
- Adjustment of integrated forecasts of S&T and innovations to changes in changes of target indicators
- Monitoring of NIS based on the limited set of key indicators
- Expert assessment of feasibility of target indicators
- Development of short- and medium-term target indicators of NIS development on the basis of analysis of strategic macroeconomic trends



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Thank you for your attention!

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