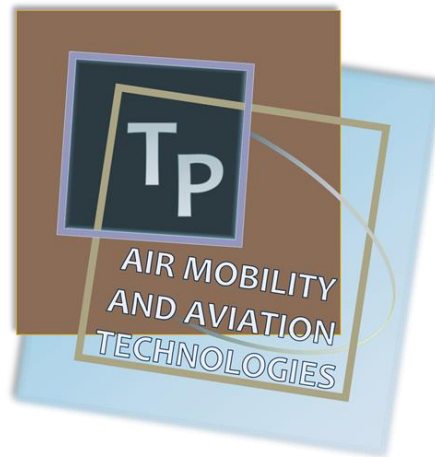


## Technology platforms of the Russian Federation

Coordinator – Interdepartmental Commission for Technological Development under the Government  
Commission for the Modernization of the Economy and Innovative Development of Russia



# Technology platform «Air mobility and aviation technologies»

The Technology platform «Air mobility and aviation technologies» – is a way of uniting the state, business and the scientific community to modernize the air transportation system of Russia based on the implantation of indigenous technologies. At the initial stage of its development (2010-2015), the Technology Platform made a significant contribution to the development and approval of **key documents** for the strategic development of the industry – the state program «Development of the aviation industry for 2013-2025», the draft National Plan for the Development of Science and Technology in aviation industry; the Platform organized and held **more than 50 thematic events** on topical issues of aviation industry and air transport in the Russian Federation, more than 200 research and prospective aircraft development projects were considered; considerable **experience of expertise** has been gained.

In order to unite organizations to promote aviation development and ensure the functioning of the Technology Platform, on December 1, 2015, on the basis of the Platform, **the Association of organizations to promote aviation development «Technology platform «Air mobility and aviation technologies»** was established. The foundation and launch of the Association opens a new stage in the development of the Technology platform due to the higher level of organization and coordination between participants. The formation of a legal entity allows us to provide not only technical support for the functioning of the Platform, but also makes it possible to move on **to real project work**.

## Technology Platform general information.

The development of the technology platforms in the Russian Federation began in 2010-2011, when on the initiative of the Government, international experience was actively studied and the basic principles of the functioning of platforms were laid. In formulating the principles of activity of Russian technology platforms, the European model was adopted as the basis, the development of which in the countries of the European Union has been carried out since the 2000s.

The closest analogue of the Technology platform «Air mobility and aviation technologies» is the Advisory Council for Aeronautics Research in Europe (ACARE), which was created in 2001 and developed the first version of the Strategic Research Program (currently – Strategic Research and Innovation Agenda, SRIA), aimed at ensuring the achievement of the goals formulated in the document developed the year before, «European Aeronautics: A Look in the year 2020». ACARE currently includes almost all the leading European aircraft manufacturers, research centers, universities, airlines, airports, suppliers of air navigation services and MRO services, fuel producers, representatives of EU member states, the European Commission and regulators, as well as a number of aircraft manufacturers from non-EU countries (total – 112 organizations).

The experience of most countries implementing the industrial development model in a market economy shows that companies usually don't have enough funds to finance search and applied research and development, which are considered to be quite risky investment objects. Leading countries focused on technological leadership and market development make significant government investments in this area; at the same time, there is a serious problem of **prioritization** – that is, determining the directions in which you need to invest in order to maximize the return on investment – in new products and technologies that can enter the market and take its rightful place in it.

The Technology platform «Air mobility and aviation technologies» was created on November 29, 2010 and is included in the List of technology platforms approved by the

Government Commission on High Technologies and Innovations (Protocol of April 1, 2011, No. 2).

The organizations initiating the formation of the Platform were:

- FSUE «Central Aerohydrodynamic Institute named after professor N.E. Zhukovsky» (TsAGI);
- FSUE «Central Institute of Aviation Motors named after P.I. Baranov» (CIAM);
- FSUE «State Research Institute of Aviation Systems» (GosNIIAS);
- FSUE «State Research Institute of Civil Aviation» (GosNII GA).

Subsequently, the United Aircraft Corporation, State Corporation «Rostec», JSC «Russian Helicopters», JSC «United Engine Corporation», JSC «Aeroflot», Volga-Dnepr - Unique Air Cargo, Moscow Aviation Institute, other leading Russian design and manufacturing companies, universities joined the Technology Platform.

**The strategic goal** of the Technology platform «Air mobility and aviation technologies» is development and implementation technologies to radically improve air mobility of citizens in Russia, increase the volume of cargo transportation and other aviation work for various sectors of the economy, which will predetermine the emergence of new markets for high-tech products and services, as well as ensure the rapid dissemination of advanced technologies in both the aviation and related branches.

The main areas (groups of technologies) developed under the Technology Platform are:

- technologies for the development of aircraft of various classes and purposes;
- technologies for the development of an air traffic control system (air traffic management system);
- technologies for the development of ground-based aviation infrastructure (aerodromes and airports).

**The main requirements** for the development of technologies within the framework of the Platform are:

- full compliance with existing and future requirements for aviation safety and security;

- compliance with existing and future environmental requirements;
- improving energy efficiency and energy saving;
- physical and economic (financial) accessibility of air transport and aviation services

(Memorandum of Education for the Platform).

According to current Russian strategic and methodological documents, technology platforms are considered as one of the key coordination and cooperation mechanisms for the implementation of the national scientific, technical and innovation policy, within which science, the state, business structures and consumers are able to develop a common vision of the technological development prospects of the relevant industry or technological area; to develop and implement a strategic research and innovation program.

Given the stabilization stage of the development of the Russian aircraft industry and the presence of a number of serious industry-wide problems, including the low share of civilian products, poor coordination between science, industry and airlines (operators), the significant share of imports in civilian aircraft – **the most important task of the Technology platform «Air mobility and aviation technologies» is participation in the formation and improvement of industry-wide (state) policy.**

Also, technology platforms are able to play an important role at the stage prior to commercialization, by expanding and coordinating research and development works; provide effective support for the implementation and commercialization of the most promising technologies; actively participate in improving the legal regulation of scientific, technical and innovative activities.

The formation and functioning of technology platforms is considered as an important tool to increase the openness of the innovation system, create additional demand for research and development of educational and scientific organizations, as well as attract small innovative businesses to achieve the goals of the state innovation policy.

### **The main stages of the development of TP «Air mobility». Technology Platform Participants.**

At the initial stage of the Technology Platform's activities (in 2011-2015), the main emphasis was placed on organizing on the base of the Platform a wide and effective **communication platform**. During this period, a large number of thematic events were held (more than 50 in total) on topical issues in the development of aviation industry and air transport in the Russian Federation: planning work to research and development, organizing interaction between science and industry; reviewing of key strategic and program documents (the state program «Development of the aviation industry for 2013-2025», the National Plan for the Development of Science and Technology in the aviation industry, the Transport Strategy of the Russian Federation, and etc.); more than 200 research and prospective aircraft development projects were examined; significant experience of expertise has been gained.

The high-quality organization and carrying out of these events, the professional approach to the formulation and discussion of the thematic issues made it possible to attract a wide range of organizations and experts from the aviation and related industries to the Platform, to ensure the foundation of a specialized management organization – the Association «Technology platform «Air mobility and aviation technologies», the founders of which were 45 organizations.

Currently, **68 organizations** are members of the Association; and the total number of organizations participating in the Technology platform is **125 organizations**.

The main management bodies of the Association are currently:

- The General Meeting of members of the Association;
- The Supervisory Board of the Association;
- The Management Board of the Association;
- The Chairman of the Management Board of the Association.

The Supervisory Board of the Association consists of 15 members; the Chairman of the Supervisory Board is the Science and Technology Advisor of President of PJSC UAC, corresponding member of the RAS **Boris S. Alyoshin**.

The Management Board of the Association includes 32 members. The Chairman of the Management Board of the Association is the General Director of CJSC «Expert Group «KUTRI» **Alexey A. Kim**.

Currently our Association is carrying out **analytical work** in the following main areas:

- key issues in the development of aviation industry and air transport in the Russian Federation;
- mechanisms for managing research and development;
- priority areas and projects of the Technology Platform (including formed mechanisms and methods for organizing project work).

As for **project activities**, the main emphasis in the work of the Platform in previous years was placed on participating in the implementation of the Federal Target Program «Research and Development in Priority Directions for the Development of the Russian Science and Technology Complex for 2014-2020». Based on the proposals of the TP «Air mobility and aviation technologies», 4 tender lots were announced (13 winning projects) for a total of **411.7 million rubles** (budget financing). The winners of the competitions of the Ministry of Education and Science of Russia were **29 projects** supported by the Platform, for a total amount of **2,888.6 million rubles**, including budget financing – 1,576.1 million rubles, extra-budgetary co-financing – 1,312.6 million rubles.

Despite the fact that these projects (works) were mainly initiated by the organizations themselves - applicants or their industrial partners – all of them correspond to the topics (directions) of the Technology Platform activity; and for the Platform, it is important to carry out regular monitoring and expertise of their development, including to identify promising results and assess the possibilities of their

implementation in existing or new commercial aircraft projects.

In 2018, we began negotiations with key TP participants on the formation on the basis of the Association of a kind of financial «hub» – an integrator that ensures the consolidation of finance resources of interested organizations, planning, coordination and implementation of joint projects that meet the profile of the Platform and at the same time aimed at solving common tasks for these organizations.

In these projects, the Association may act as the lead contractor, whose main functions are:

- organization and coordination of work;
- selection of the most qualified performers and collaborators;
- ensuring the quality and effectiveness of work (results);
- responsibility for the results of work;
- promoting the results of work and developed initiatives (projects, thematic topics) in federal government bodies, specialized foundations and development institutions;
- attraction of additional financing and co-financing.

The most qualified experts and specialists (organizations) who are responsible for the results of work on specific issues (areas of work) may be involved as project executors (co-executors) of work on projects in agreement with customers (financial partners).

The structure of the project teams (consortia) formed for the implementation of research or technological projects, it is planned to include representatives of organizations and specialists representing various groups of organizations and teams, both scientific (applied, university, academic, aviation science), and manufacturing (design organizations; technology and engineering companies). Potential consumers of the planned results (manufacturing and design organizations, airlines, airport operators) must be involved as participants (experts) of the project.

As sources of financing for these projects (works), we consider state and federal target programs in the field of development of aviation industry and air transport of the

Russian Federation, as well as intersectoral (federal) programs to support science, industry and technology; specialized foundations and development institutions focused on supporting promising research and development; funds of Russian and foreign companies interested in implementing specific projects (works).

Financial support for scientific and technical projects (works) that are in the early stages of technological readiness is planned to be carried out mainly through subsidies for basic and exploratory research, as well as specialized funds (Russian Science Foundation, Russian Foundation for Basic Research).

Research and technological projects focused on the development of specific products should be supported by sectoral and cross-sectoral state and federal targeted programs and financed by appropriate subsidies. Industrial companies (business structures) must necessarily participate in the implementation of such projects, including design, manufacturing, operational, engineering, service and other enterprises and organizations of the real sector of the economy, the main tasks of which are: the most correct setting of tasks, independent examination (assessment, acceptance) of the results of the work performed, ensuring the necessary extrabudgetary co-financing.

Further promotion of the long-term results of these projects can be carried out in the framework of public-private partnership with the participation of specialized funds and development institutions (Russian Venture Company OJSC, Skolkovo Fund, Innovation Promotion Fund, Industrial Development Fund, etc.), as well as other forms of support for innovation and investment.

To ensure the effective functioning of the Technology Platform and its real impact on the development of the industry, including in order to implement our own (initiated by the Platform itself) projects, it is important to carry out as much as possible coordinated work in all areas: including participation in the development and realization of strategic documents at the federal level; development (updating) and subsequent implementation of the Platform's Strategic Research and Development Program; **organization of effectively functioning working and expert bodies of TP.**

The formation of working groups (directorates) on initiated (proposed for implementation) projects began from the moment the Platform was initiated. However, after the foundation on the basis of the Technological Platform of the legal entity – the Association, the approval mechanism and status of these bodies changed. In accordance with the Charter of the Association, the approval of the formed directorates, working groups, expert and other specialized bodies of the Association, and the appointment of their leaders are within the competence of the Association's Management Board; and these bodies themselves, after the approval of the group members, acquire the status of official bodies of the Platform.

The list of members of the project management bodies of the Platform is compiled in accordance with the basic principles for the foundation and operating of TP, as enshrined in the Charter and other documents of the Association and providing for an *equal (proportional) representation of science and industry (business)*. An important factor in ensuring the effectiveness of these bodies is the membership in them of the *most competent specialists* in relevant areas (projects); as well as the presence of representatives of state-owned companies - governing organizations of integrated structures.

The main tasks of the project management bodies of TP are:

- development of detailed work plans (programs) for the project;
- development of proposals for financing and co-financing of projects;
- direct management of the project.

When planning, implementing and evaluating the results of project implementation within the framework of the Technology Platform, the *technology readiness level* is assessed on an obligatory basis, the results of which are used when deciding on the beginning (initiation) of the project and accepting (evaluating readiness for implementation) the results obtained.

Nowdays, within the framework of the Platform's activities, **3 working groups** have been organized and are in operation – «Small and Regional Aviation»; «Engines for small and

regional aviation», «Use of gas fuel in aviation». Currently it is planned to create a working group on unmanned aircraft systems.

In 2018, the Association concluded and successfully executed the first commercial contract for the research work «Research on the aircraft industry market as a customer sector of aircraft piston engines. Formation of the basic requirements for the technical appearance of a promising aircraft piston engine» (customer – FSUE «CIAM named after P.I. Baranov»).

**High-qualified expertise of scientific, technical and innovative projects – the main tool and condition for the progressive development of the industry.**

Since the formation of the Technology Platform, we have paid special attention to the organization of expertise, as we clearly understand that without a high-quality and truly independent expertise it is impossible to reasonably make decisions, both on our own projects initiated by the Platform and on projects proposed by other organizations.

The main areas (types) of expertise of the Platform are:

- scientific and technical expertise to assess the scientific validity and technical feasibility of a project (work);
- financial and economic expertise to assess the economic feasibility and effectiveness of the project (work).

Also, a complex expertise may be carried out, including both scientific and technical expertise, and financial and economic (investment) analysis.

In the initial stage of Platform's functioning, we conducted a large number of expert events at which aviation research and development projects were considered, the authors (initiators) of which were leading scientific and industrial organizations of the industry – Central Aerohydrodynamic Institute named after professor N.E. Zhukovsky, Central Institute of Aviation Motors named after P.I. Baranov, State Research Institute of Aviation Systems, Siberian Aeronautical Research Institute named after S.A. Chaplygin, All-Russian Scientific Research

Institute of Aviation Materials, JSC «Russian Helicopters»; as well as projects (areas of work) developed by higher education institutions. In addition, platform experts considered a lot of prospective light and regional aircraft development projects.

Participation of the Technology Platform in the development and approval of the subprogram «Aviation Science and Technology» of the state program «Development of the Aviation Industry for 2013-2025» in 2011-2012 allowed to coordinate and affirm this program, which provides for a significant increase in the amount of planned subsidies for research and development.

Currently, the total number of experts and specialists involved in the activities of the Technology Platform is **625 persons**, including 330 – from industry (including design and manufacturing companies and other industrial organizations), 235 – from science (including research institutes of aviation and other industries, universities, institutes of the Russian Academy of Sciences), 31 – from transport organizations (airlines and other air transport organizations), and 29 – from other organizations (consulting, expert, analytical companies).

Of the total number of experts, the officially accredited experts of the Technology Platform, the decision on approval of which was adopted by the Governing Board of the Association, are **166 persons**, of whom 50 are doctors, and 51 are candidates of science.

**The main areas of the expertise of the Technology Platform:**

- airplanes, helicopters, research and development in aerodynamics, strength, aeroacoustics, flight safety and control systems;
- aircraft engines and power plants, research and development in this field;
- airborne electronic equipment (avionics), research and development in this field;
- aviation equipment, systems, research and development in this field;
- aviation materials and technologies for their production;
- experimental and test facilities;

- industrial technologies;
- maintenance, repair, overhaul of aircrafts, engines and aviation equipment;
- air traffic control system (air traffic management system);
- ground-based aviation infrastructure (aerodromes and airports);
- financial, economic and investment analysis of the aviation projects;
- legal and methodological regulation of aviation.

Since 2012, the Technology Platform regularly conducts projects expertise proposed and executing within the framework of the federal target program «Research and Development in Priority Directions for the Development of the Russian Science and Technology Complex», managing by the Ministry of Science and Higher Education of the Russian Federation.

In total for the period 2012-2018 Platform experts:

- considered 377 proposals on topics (projects) of applied research and development;
- conducted 133 expert reviews of the proposed projects;
- conducted 69 expert reviews of the results of the realization of the projects.

Also, we conduct an expertise of scientific, technical or innovative projects at the request of the interested organizations. So, in 2019, the Technology Platform conducted an expertise of the 9 projects.

At present, the stage of organizational construction of our expert activity is being completed – after the formation and approval of the members of the Expert Council of the Technology Platform, the main functions of coordination and management of the expertise process will be transferred to this body.

Organization of professional expertise of scientific, technical and innovative projects is the most important and priority task of the Technology Platform. The full functioning of the Platform's expertise system will provide quality support for the of the strategic directions of TP activities established during its creation.

At the moment, our experts are ready to cooperate on issues of scientific, technical, financial, economic and other types of expertise in the areas of our thematic specialization on the orders of interested organizations, authorities and individuals. It is also possible to provide consulting services, communication support and organize a cooperation with foreign experts.

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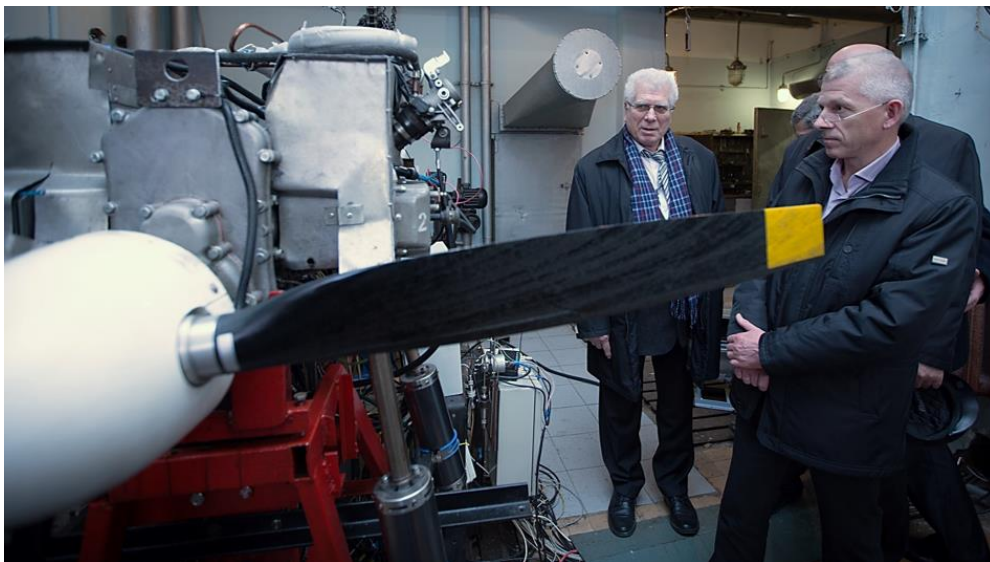
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More information about the Platform you can see on our website: <https://aviatp.ru/engversion>.

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