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Main trends in the development of world civil aviation

The main trends in the development of world civil aviation are described. The system approach allowed us to describe the essence of the civil aviation market and describe the main factors affecting the information format of the aviation industry.

Air transport is one of the most dynamically developing modes of transport, whose importance grows with the increase in the of world trade structure. Civil aviation plays an important role in the development of the economies of countries, the solution of social and economic problems. Today, global airlines and airports increase the use of digital technologies in managing their activities. Some authors believe that the future of aviation development lies in the using of artificial intelligence [2, 3, 4, 5 etc].

Based on the existing conditions of the functioning of the civil aviation market, the research of its development processes ceases to be fragmentary, acquires a comprehensive focus of study and is to develop the scientific bases for the unification of its structural elements into a single whole.

Studying the civil aviation market it is necessary to use a systematic approach that allows to view the object as a system and focuses research on disclosure of its integrity, on the identification of various connections in it and bringing them together into a single complex. The systematic approach allows us to exhaustively describe the essence of the civil aviation market and provide effective definitions of the basic concepts.

Civil aviation is one of two major categories of flying, representing all non-military aviation, both private and commercial [7]. It is a complex, ramified system requiring increased attention to safety regulation and the provision of quality services to passengers.

Relations in the use of airspace are diverse. In its entirety, this diversity forms not a simple component of elements, but a system that is an organic aggregate of interacting elements, all its structural divisions are interconnected, in spite of the fact that each element is relatively independent, fulfills only its specific functions. These relations can be divided into two spheres, depending on the specifics of the performance of aviation work - this is commercial civil aviation and general aviation. Each sphere in turn also has structural elements and is subdivided into links. Nevertheless, all elements interact with each other and with other systems, and in practice these relationships are of current importance. All varieties of relations on the use of airspace of civil aviation have an organic integrity, capable of development.

Today, experts identify five main trends, which are likely to be followed by the future development of civil aviation [1, 6].

1. Search for revolutionary solutions in aerodynamics:

Passengers of 2050 will move in the air on devices whose aesthetics will not have nothing to do with the present.

The latest achievements of Boeing and Airbus companies with models 787 Dreamliner and A350, according to most experts, have already reached the limit of possible improvements. It's time to work on radical modernization of aerodynamic qualities, capacities, load-carrying capacity.

In all appearances, the development of aerodynamics will follow the path of finding even more streamlined forms, the design of the flying wing, which is already used today in military aviation. New aerodynamic properties should provide the future liner with 85% of the speed of sound and 50% of fuel economy. In addition, there will be improved an aircraft engines, the development of which will follow the constructive principle of “open rotor”.

2. New energy sources:

As modern research shows, hydrogen is likely to become the new fuel. It is already used today in rocket fuel. However, while there is a serious and unresolved problem - the production of hydrogen in pure form, necessary for creating a new type of fuel, is extremely energy-consuming and expensive. We also consider options for installing nuclear engines on aircraft.

However, the most promising fuel for the future is electricity. The use of ultra-light alloys to build a fuselage, superconducting materials for the creation of electrical circuits and installation of solar batteries on the liner are the path that researchers are taking today. In all appearances, such a plane of the future should weigh no more than a modern car.

3. New materials:

Today, research is underway to develop lightweight and ultra-strong ceramics that will be able to replace metal junctions of airplanes. Another area of research is the search for new aluminum alloys known under the acronym ALM (Additive Layer Manufacturing), which must have resistance to overloads, but are cheaper than modern materials.

4. Cabin:

There will be a transparent roof in the airbus of 2050, allowing you to enjoy the celestial landscapes, ergonomic chairs and a virtual, holographic reality space where a passenger can play golf or make shopping.

The cabin of this airliner in the future, according to researchers from the company Airbus, will be divided into several zones, adapted to the needs of passengers. For example, there will be a zone of relaxation where the air is saturated with antioxidants and vitamins; zone of aromatherapy and acupuncture, a zone of mobile games in virtual reality, etc.

5. Achievement of supersonic speeds:

The experience of supersonic flights has already exists - the French and Russian flew for some time on supersonic passenger aircraft. Today, Astrium (the EADS space branch) has prepared its latest development, a project called ZEHST (Zero Emisssion HyperSonic Transportation), which is dedicated to fifty years of experience in researching manned flights outside the earth's atmosphere.

The world transport system is one of the key sectors of the world economy that play an important role in the dynamics of economic processes, the globalization

of economic activity, plays an important role in the implementation of world economic relations in modern conditions. Transport - an important part of the global economy, as it is a material carrier between the states. The specialization of states, their integrated development is impossible without a transport system.

Globalization has dramatically changed the volume and model of freight and passenger traffic and increased requirements for both international and local transportation systems. Firms-producers are increasingly becoming international. They created production facilities scattered all over the world, and most of their cargo consists of in-house shipments of semi-finished products, and finished products are sent to markets around the world. In addition to providing goods in a variety of ways, modern telecommunications play an important role in international trade in services.

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