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Preface

The IEEE Russia North West Section, Saint Petersburg Electrotechnical University "LETI", and the European Centre for Quality (Moscow) are pleased to present the Proceedings of the 2018 IEEE International Conference "Quality Management, Transport and Information Security, Information Technologies" (IT&QM&IS).
The Conference was held in St. Petersburg, Russia on September 24–29, 2018, and it was proudly hosted by Saint Petersburg Electrotechnical University "LETI". The Organizing Committee believes and trusts that we have been true to the spirit of collegiality that members of IEEE value whilst also maintaining a high standard as we reviewed papers, provided feedback and now present a strong body of published work in this collection of proceedings.
The themes for this year's conference were chosen as a means of bringing together academics and industrialists, engineering and management research, manufacturing and teaching, and providing a basis for discussion of issues arising across the engineering and business community in relation to Quality Management, Information Technologies, Transport and Information Security aimed at developing engineers and managers for the future.
The goal of these proceedings has been to present high quality work in an accessible medium, for use in a wide community of academics, engineers, managers, and industrialists, the community united by the key words Science, Education, Quality, Innovations in engineering. To achieve this aim, all abstracts were blind reviewed, and full papers submitted for publication in this journal of proceedings were subjected to a rigorous reviewing process.

Prof. Vladimir N. Azarov,
Dr. Sergey O. Shaposhnikov,
Co-Chairs of the Conference Organizing Committee

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Evaluation of the Quality of International Instruments Determining the Interaction of States in the Exploration of Near-Earth Space

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***Abstract*—The article proposes a classification of the main international documents that determine the interaction of States in exploration of outer space and presented the composition of modern legal normative instruments on the use of near-Earth space. It is shown that currently there is a problem "International legal instruments on the near-Earth space exploration don't work as planned". Using the quality tools, authors showed and analysed key categories affecting this problem.**

Keywords - space exploration; near-Earth space; legal normative instruments

The number of States that are capable of independently space launching increase every year. Although among these States there are countries that have performed their launches from foreign spaceports. For example, the United Kingdom launched from the Woomera Spaceport in Australia. The EU countries performed their launches from Centre Spatial Guyanais in Kourou, French Guiana and in 1995 Ukraine carried out its space launch from Plesetsk cosmodrome, Russian Federation.

In addition, there are private commercial companies that have made significant progress in creating facilities for launching payloads into space and operational payloads. These companies aspire exploration of outer space as well as to start exploitation of natural resources of other planets. The dynamics of independent space launches of different countries is presented in Figure 1.

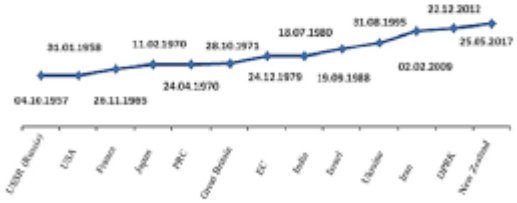

Fig. 1. The dynamics of independent space launches of different countries

Increased numbers of countries with national space research programme resulting in the need to improve the quality of international regulation of outer space activities. And it is a good place to start from the establishment of mutually agreed concepts which must be reflected in international documents.

It should be noted that to date there is no internationally adopted boundaries of near-Earth space. In Russia, near-Earth space is conventionally divided into four zones: the outer space - aerospace, near space, medium and deep space. In the United States, outer space is conditionally divided into geospace, cislunar space and deep space. In October 1960 at the 53rd Congress in Barcelona the Fédération aéronautique international (FAI) accepted altitude of 100 km above Earth's sea level as the boundary between airspace and outer space and standard for record-keeping in astronautics and aeronautics. The Committee on the Peaceful Uses of Outer Space on behalf of the General Assembly had prepared a draft decision for determination of boundary between airspace and outer space in December 1966. The majority of members of the Committee (then - 24 States, now - 77 States) agreed to accept boundary at the altitude of the perigee height of the orbit of the spacecraft. And this is 100-120 km above sea level. The Russian Federation is of the same opinion. Nevertheless, the United States, Britain and a number of other countries with national space programs have opposed the establishment of such a boundary, arguing that a legislative definition at the international level boundary of near-Earth space is not necessary and would only impede the exploration of outer space. In 1979, the USSR developed and submitted (and in 1983 specified) the draft document, which proposed to establish boundary at an altitude of 100-110 km and establish that outer space is incapable of appropriation. However, the document was controversial and was not approved. Therefore, boundary between airspace and outer space has not yet universally accepted at the international level and hasn't fixed in international legal documents. The resolution of this issue is extremely important because of the need to develop a number of international documents for example related to the overflight on landing of national landers over the territory of other countries or flight of suborbital vehicles with nuclear or other weapons over territory of various countries.

The regulatory issues of space exploration has arisen immediately after the launch of the first artificial Earth satellite

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