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## ON THE NATIONAL PROGRAM OF COUNTERACTION SPACE THREATS

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### ABSTRACT

At PDC-2011 we argued for the development of the national program to counteract space threats. The national program was considered as a good basis for establishing an efficient international cooperation. Good examples of the national programs were provided by NASA's NEO program and European SSA program. In the past two years the idea has got a practical development in Russia.

In this report we present a brief overview of the current state of activities on the NEO problem in Russia. Major attention is paid to the preparation of the program of a unified system for prevention and countering space threats. Roscosmos gave start of this activity in 2012. The program will address two kinds of space threats: asteroid/comet impact hazard (ACH) and space debris. Participation of number of ministries (Roscosmos itself, Ministry of Education and Science, Foreign Affairs Ministry etc.) and organizations (e.g. Russian Academy of Sciences) is foreseen.

As it concerns NEOs the main line of the program is to construct the efficient system of detection and monitoring of the dangerous bodies. The major system elements to be constructed (or modernized) are:

- Detection facilities both ground-based and space ones;
- Monitoring (follow up) facilities;
- Information analytical center.

All these constituents are briefly described in the report. The first two items can be considered for both kinds of threats consistently, since many observational aspects are similar.

The special attention is drawn to ensure possibilities to work in cooperation with MPC as the only international clearing house, the broadly discussed (international) Information, Analysis and Warning Network (IAWN) and in the Mission Planning and Operations Group. Russia was and will be an active participant in the UN activity on the NEO problem either.

As to the measures of counteracting the threats this system includes some measures for space debris only. However Russia considers international collaboration in the ACH-field (direct counteracting the collision and/or mitigation) as vitally important. One of the first steps in this direction is made by participation in the NEOShield Project initiated by European Council.

An initiative on a construction of data-bank of impact consequences such as geographical, economical etc. is described in the report. The initiative was launched at the UN NEO group AT-14 meeting in Vienna in February 2012. The data bank is considered to be similar to those elaborated and/or under creation for tsunami and climatic hazards in some developed countries.

The idea is simple. It is known that the consequences of a collision are very dependent on many details: the characteristics of the colliding body, parameters of atmospheric entry, the relief details, the density of populations, industrial environment etc. One requires the most powerful supercomputers to calculate consequences in a reasonable time with a sufficient accuracy. The suggestion is to pre-calculate the consequences for all the most "sensitive" (to the ACH) regions on the Earth during "quiet age" (before the next serious collision). This will speed up and facilitate decision-making process. It is clear that for some countries it will be problematic to construct an own part of the relevant data bank. A dedicated international program would be helpful.