



## Russia's Posture in Space

### Prospects for Europe

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Russia has gained a prominent role among the spacefaring nations due to political circumstances and its robust and reliable programs. With the USA still depending on Russia for human access to space since the decommissioning of the Shuttle in 2011, in particular to the ISS, the European Space Policy Institute (ESPI, Vienna) undertook an overall analysis of the current status of Russia's space program to predict Russia's plans and projects for the coming years and to derive possible partnerships and consequences for Europe's space program.

The book actually recapitulates Russia's space program developments from the very beginning ("the glorious days") with an analysis of the development of the infrastructure and the industrial technological landscape as it exists right now with "pointers into the future" taking "internal" and "external" influences into account.

A very interesting chapter is devoted to Russia's space relations with key partners as USA, China, India and other countries.

Weaknesses and strengths of the Russian space program from a European point of view are pointed out with a lot of documented background material, concluding with a summary chapter that postulates ESPI's predictions of Russia's future space science and exploration programs. Despite the many uncertainties, this profound in-depth analysis takes as much as available (Russian-) internal and external factors as well as past and current experiences into account, and that includes the current political situation as of 2018, the reassuring conclusion for the USA and Europe is:

"Some of the most recent developments in Russia's external relations such as for instance in research participation in the LOP-G (Lunar Orbital Platform Gateway, NASA) framework and the recently established corporation with ESA for lunar exploration, clearly show that Western countries remain preferred, not to say obliged partners for Russia in its space endeavor. Russia's industry and research institutes are indeed interested in working more closely with the American and European counterparts, not least because Russia needs their quality management expertise. The Europeans in particular are perceived as important and reliable partners with a diversified and attractive offer for Russia and with the long-lasting corporation experience having accrued tangible benefits for both sides."

Interestingly enough the planned heavy lift capabilities, important for future Moon and Mars explorations are mentioned to be the modular Angara A5V (40 t to LEO, planned) and the Energia-5VK heavy launcher (105 t to LEO, >2028).

The book also serves as a very compact and concentrated up-to-date sort of encyclopedic representation of Russian space developments, achievements and performance data from the very beginning, arranged according to: Russia's space firsts, major programs, joint ventures and co-operations, substantiated and completed with listings of references and footnotes.

"Russia's Posture in Space" is a most valuable book for decision makers, for the space industry, for investors, banks and insurance companies because it provides a host of facts, statistics and comparative graphical representations, but it might also be suitable for space historians and engineers to trace back Russian historical milestones and to better appreciate the current situation.



*Angara A5-P (very right)*

On the left is the “Angara A5-P” model, cancelled in 2016, which might be replaced with the new “Anagra A5-V” (target date not known). The planned super heavy launcher for human spaceflight, proposed by RKK Energija is a 5-stage launcher “Energia-5KV” which could lift the piloted spacecraft “Federation”, a lunar lander or a lunar cargo vehicle. Lift off mass 2300 tons, carrying 105 t to LEO or 2.5 t to lunar orbit.



*Energija –Buran (discontinued)*

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