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# Development of Positioning, Navigation and Timing Support for Russia. Status, Problems and Prospects. Part 1. Review of the Development of the Conceptual Apparatus and Regulatory Framework of the Russian RNT in comparison with the US PNT. Expert Review

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**Abstract.** The article analyzes the development of the conceptual apparatus and regulatory framework of the system of measures for positioning, timing and navigation support (PNT) of the Russian Federation in comparison with the PNT system of the USA from the normatively established positions of system analysis and systems engineering. The official definitions of concepts and official descriptions of the structures of the PNT of the Russian Federation and the PNT of the USA at various hierarchical levels of development are considered and compared. It has been established that: according to the hierarchy of architectural development, the definition of the concept of PNT in Russian Federation is lower than the definition of the concept PNT in the US by one level of development; in terms of the number of participants at the “high” hierarchical level of development, the development of the PNT in Russia significantly lags behind the development of the US PNT; the interaction of PNT participants with each other and the distribution of their roles, introduced at the “high” hierarchical level, significantly exceeds similar indicators of the development of the Russian PNT; The organizational structure, infrastructure and functionality of the US PNT, established at the “highest” hierarchical level of development, significantly exceed the organizational structure, infrastructure and functionality of the Russian PNT. The resulting formal assessments of the development of the Russian PNT architecture in comparison with the development of the US PNT architecture as a whole show a significant lag in the development of the Russian PNT architecture from the development of the US PNT architecture, but it must be taken into account that the study does not consider the development of GLONASS, which is the core of the Russian PNT. At the same time, in numerous activities for the development of GLONASS at the federal, industry and regional levels, activities are also carried out for the development of Russian PNT as a whole.

**Keywords:** GLONASS, PNT, RNP, positioning, navigation, synchronization

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