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#### THE FUNDAMENTAL DEVELOPMENTS BRANCH

“COGNITIVE MODELING IN THE SCIENCES ABOUT THE EARTH” (“ONZ”) OF “THE SRI "SFA CMT" OF "THE RA(N)S" NAMED AFTER V.N. VENIAMINOV”

The developed “The fundamental developments branch "Cognitive modeling in the sciences about The Earth”” (“ONZ”) treats to the fundamental developments divisions of “The scientific-research institute "System and financial analysis based on cognitive modeling technology" of "The RA(N)S" named after V.N. Veniaminov” (“The SRI "SFA CMT" of "The RA(N)S" named after V.N. Veniaminov” – The SRI) as the first SRI in structure of “The SIO "Academy of cognitive natural sciences”” (“The SIO "ACNS””), an additional component of science and education system of the modern country for creation, distribution and use of the main and derivative scientific results of the cognitive modeling technology (CMT) (www.vetrovan.(spb.)ru) [see the fundamental developments branches and departments of The SRI]:

- 1) it is executed by the principle of “administrative-economy submission”;
- 2) works in several main directions, which allow to provide development of the fundamental main and derivative scientific results (my second report on SRW from 2006-2008(9) y. was submitted to “The SPbSETU "LETI”” and The Government of The RF for the translation, carrying out of int. action and receiving of “The Nobel Prize”);
- 3) includes several various main divisions:  
I. “The fundamental developments department "The theory of the geo-physics, geology, mining and metallurgy”” (“SGGGGN”)  
*[the fundamental developments in area “Theoretical geo-physics” – theory of geo-magnetism and high layers of atmosphere, theory of meteorology, theory of climatology, theory of oceanology, theory of hydrology of land, theory of glaciology, theory of physics of The Earth, theory of cognitive modeling technology in theoretical geo-physics;*

*t h e f u n d a m e n t a l d e v e l o p m e n t s i n a r e a*  
*“ T h e o r e t i c a l g e o l o g y ”* –  
 theory of lithology, theory of tectonics,  
 theory of geological-geo-physical researches of deep structure of The Earth,  
 theory of regional geology, theory of planetology, theory of stratigraphy,  
 theory of paleontology, theory of geo-chemistry, theory of mineralogy, theory of petrography,  
 theory of experimental and technical mineralogy and petrography,  
 theory and methods of mineralogical-petrographical  
 and geo-chemical laboratory researches (bench or field),  
 theory of anthropogenic period, theory of neo-tectonics, theory of geo-morphology,  
 t h e o r y o f o r e m i n e r a l s g e o l o g y ,  
 t h e o r y o f n o n m e t a l l i c m i n e r a l s g e o l o g y ,  
 theory of geology of fields of oil, gas and condensates,  
 theory of geology of deposits of coal, bituminous breeds and peat,  
 theory of methods of search and investigation of minerals deposits,  
 theory of technics and technology of geological-prospecting works, theory of hydro-geology,  
 theory of engineering geology, theory of frozen condition of ground,  
 t h e o r y o f c o g n i t i v e m o d e l i n g t e c h n o l o g y  
 i n t h e o r e t i c a l g e o l o g y ;  
*t h e f u n d a m e n t a l d e v e l o p m e n t s i n a r e a*  
*“ T h e o r e t i c a l m i n i n g ”* –  
 theory of technics and technology of development  
 o f d e p o s i t s o f f i r m m i n e r a l s ,  
 theory of development of deposits of ores of ferrous metals,  
 theory of development of deposits of ores and looses  
 o f c o l o r a n d r a r e m e t a l s a n d d i a m o n d s ,  
 theory of development of deposits of coal and combustible slates,  
 t h e o r y o f d e v e l o p m e n t o f p e a t d e p o s i t s ,  
 theory of development of deposits of building and road materials,  
 fire-resistant, ceramic, glass and mineral technical raw material,  
 theory of development of deposits of chemical and agricultural-chemical raw material and salts,  
 theory of development of deposits precious jewels and ornamental stones,  
 t h e o r y o f e n r i c h m e n t o f m i n e r a l s ,  
 theory of development of oil and gas deposits,  
 t h e o r y o f c o g n i t i v e m o d e l i n g t e c h n o l o g y  
 i n t h e o r e t i c a l m i n i n g ;  
*t h e f u n d a m e n t a l d e v e l o p m e n t s i n a r e a*  
*“ T h e o r e t i c a l m e t a l l u r g y ”* –  
 theory of metallurgical processes,  
 theory of metallurgical heating engineering,  
 theory of manufacture of ferrous metals and alloys,  
 theory of manufacture of nonferrous (color) metals and alloys,  
 theory of powder metallurgy, theory of metallurgy of semi-conductors,  
 t h e o r y o f r o l l i n g m a n u f a c t u r e ,  
 theory of drawing and hardware manufacture, theory of pipes manufacture,  
 theory of physical metallurgy (metallurgical science), theory of the technical analysis in metallurgy,  
 t h e o r y o f c o g n i t i v e m o d e l i n g t e c h n o l o g y  
 i n t h e o r e t i c a l m e t a l l u r g y ] .

II. "The fundamental developments department  
"The theory of the oceanology, structure and physics of atmosphere,  
geodesy, cartography and geography of The Earth and planets"" ("SOFAG")  
*[the fundamental developments in area*  
*"Theoretical oceanology" –*  
 theory of oceanology, theory of applied oceanology,  
 theory of aerial photograph and photogrammetry,  
 theory of topography, theory of photo-topography,  
 theory of cartography, theory of oceanology,  
 theory of mapping of the underwater world of The Earth and planets,  
 theory of cognitive modeling technology  
 in theoretical oceanography;  
*the fundamental developments in area*  
*"Theoretical structure of atmosphere" –*  
 theory of structure of atmosphere, theory of aerial photograph and photogrammetry,  
 theory of topography, theory of photo-topography, theory of cartography,  
 theory of planetodesy of atmosphere,  
 theory of mapping of atmosphere of The Earth and planets,  
 theory of cognitive modeling technology  
 in theoretical structure of atmosphere;  
*the fundamental developments in area*  
*"Theoretical physics of atmosphere" –*  
 theory of questions of atmosphere of The Earth and planets,  
 theory of general problems of atmosphere physical experiment,  
 theory of physics of elementary particles of atmosphere, theory of atmosphere fields,  
 theory of physics of gases and liquids of atmosphere,  
 theory of thermal-dynamics and statistical physics of atmosphere,  
 theory of physics of micro-disperse firm bodies of atmosphere,  
 theory of physics of plasma of atmosphere,  
 theory of physics of atom and molecule of atmosphere,  
 theory of optics of atmosphere, theory of radio-physics of atmosphere,  
 theory of acoustics of atmosphere,  
 theory of cognitive modeling technology  
 in theoretical physics of atmosphere;  
*the fundamental developments in area*  
*"Theoretical geodesy and cartography" –*  
 theory of supreme geodesy, theory of applied geodesy,  
 theory of aerial photograph and photogrammetry,  
 theory of topography, theory of photo-topography,  
 theory of cartography, theory of selenodesy,  
 theory of planetodesy, theory of mapping of The Moon and planets,  
 theory of cognitive modeling technology  
 in theoretical geodesy and cartography;  
*the fundamental developments in area*  
*"Theoretical geography" –*  
 theory of geography, theory of historical geography,  
 theory of military geography, theory of physical geography,  
 theory of economical and social geography,  
 theory of regional geography (country science), theory of medical geography, theory of toponymics,  
 theory of cognitive modeling technology  
 in theoretical geography].

The fundamental developments branches and departments of The SRI  
 allow to develop the main and derivative scientific results of CMT.