Preliminary analysis of "The Vision for Space Exploration" program and estimation of the role of Russian space firms in its realization

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General estimation of "The Vision for Space Exploration" program

Comprehensive examination of the main directions of Universe exploration

Balanced and logical approach to the program realization

Pragmatic approach to formulating of the goals and objectives of the program

Planned involvement of world space community in the process of program realization

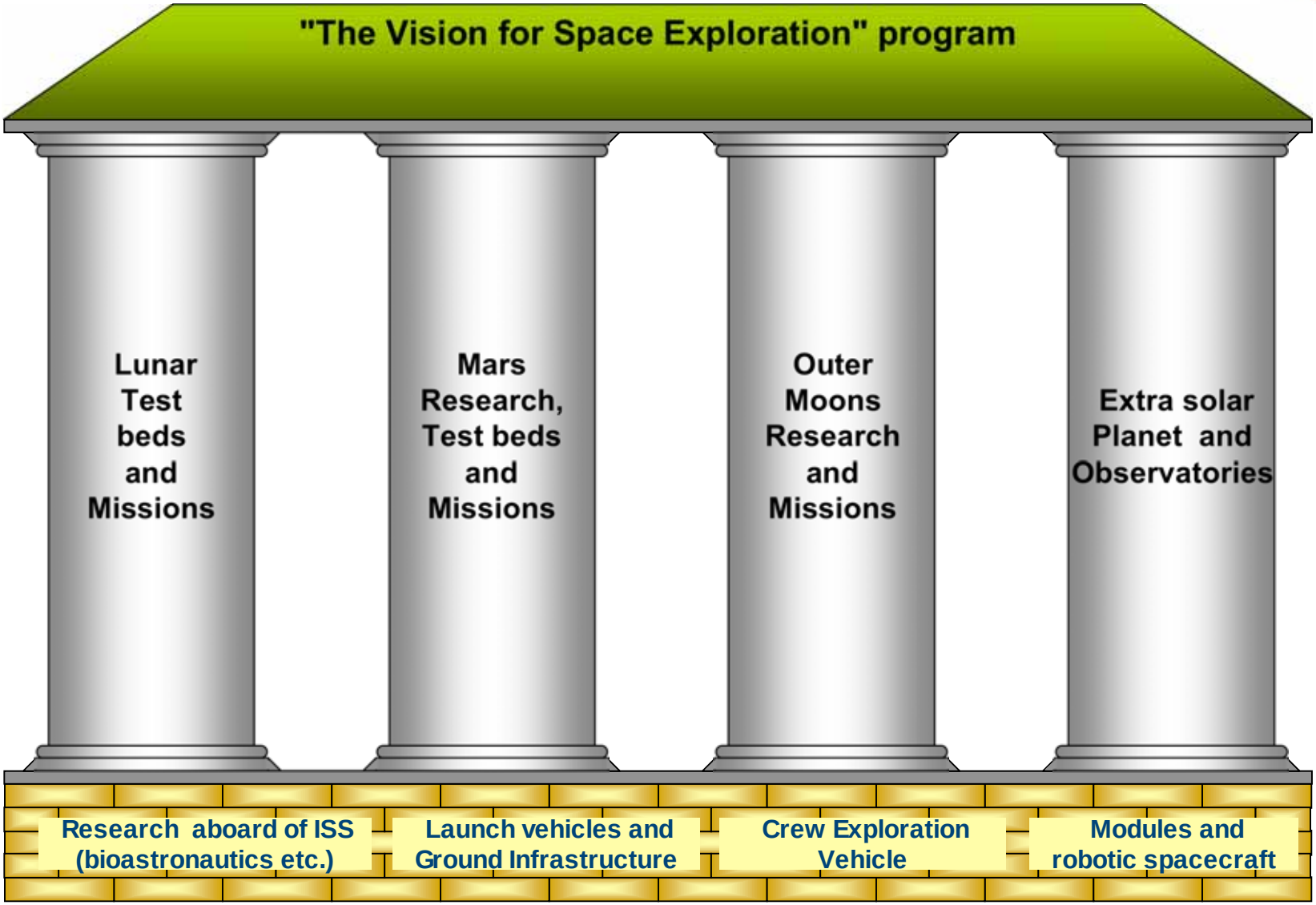
Moments, are needed to be taken into account during further program development

Strategic estimation of the ability of program realization. A creation of optimal planned mission schemes.

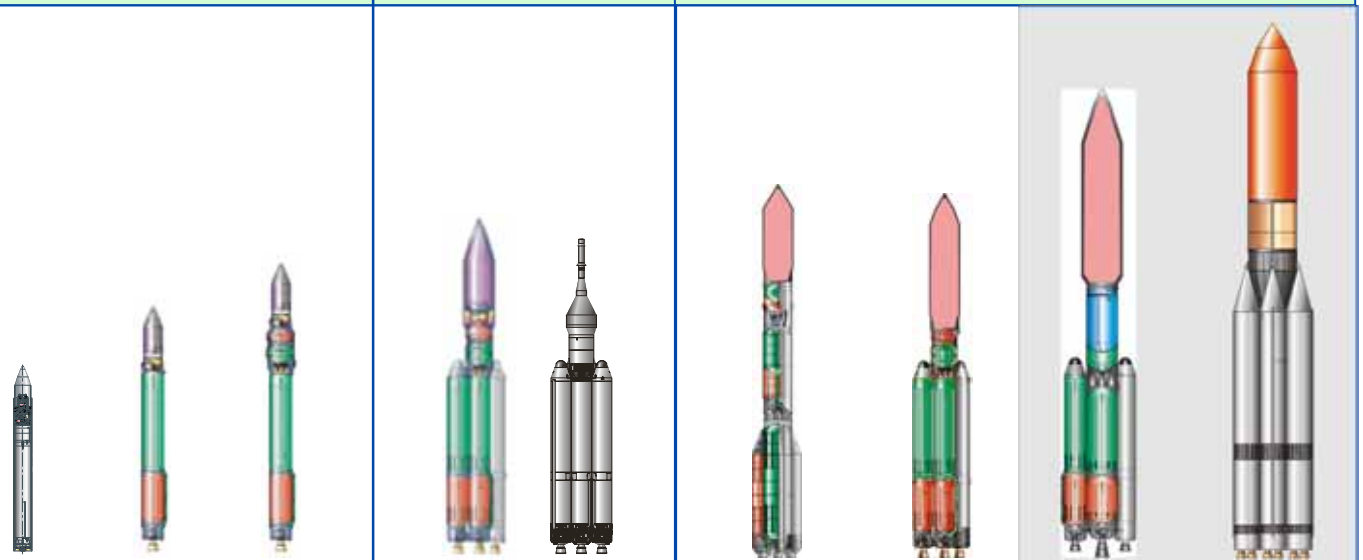
A creation of concrete program of development and utilization of space means.

Detailed analysis of technological and scientific " baggage".

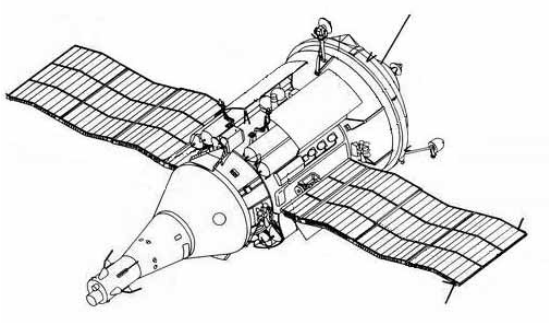
Image model of "The Vision for Space Exploration"



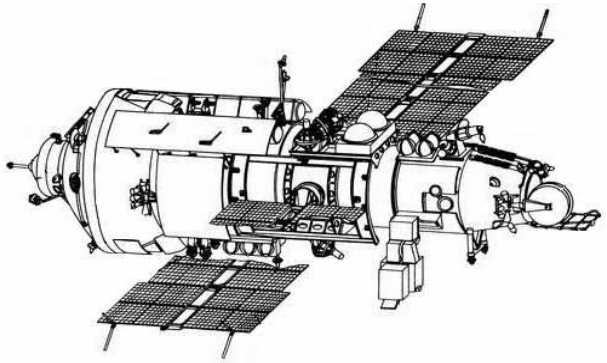
Russian Launch Vehicles

Developer	Space Launch Vehicles		
	Light class	Medium class	Heavy and super heavy class
Khrunichev Space Center	 Rockot Angara-1.1 Angara-1.2 Angara-A3 Angara-A3M Proton-M Angara-A5 Angara-7 Angara-100		
Other Russian Space Firms	 Kosmos Strela Dnepr	 Soyuz-2	
Energy capability to LEO, t	1 - 4	7 - 15	22 - 100

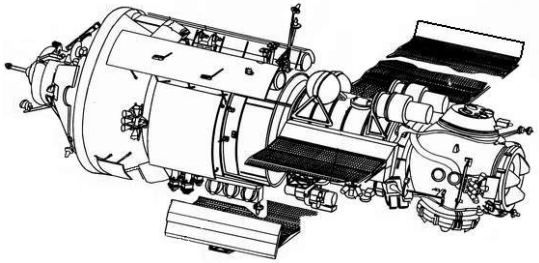
Modules for Manned Space Stations



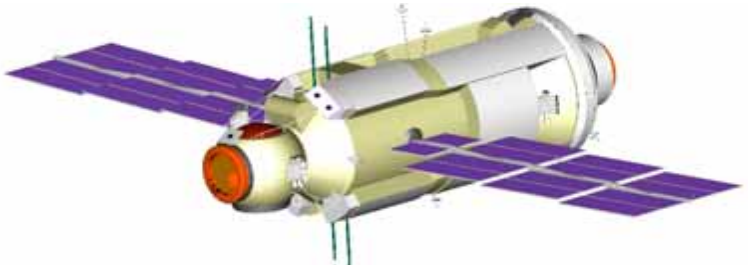
Cargo Transport Vehicle for Salyut Orbital Station



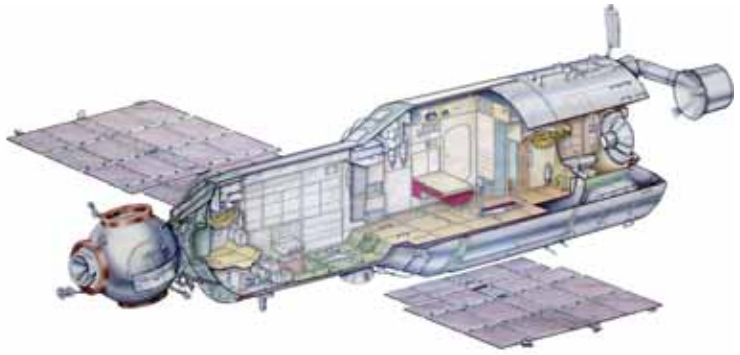
Kvant-2-type Modules for Mir Orbital Station



Kristall-type Modules for Mir Orbital Station

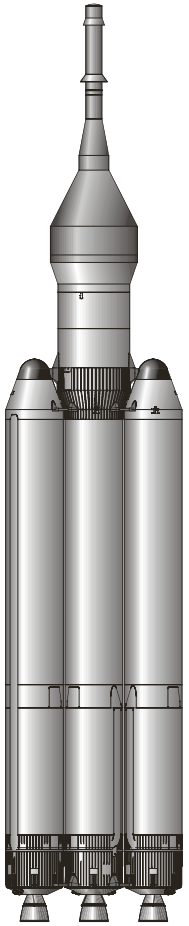


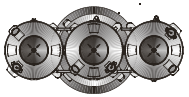
FGB Zarya Power Supply Module for International Space Station



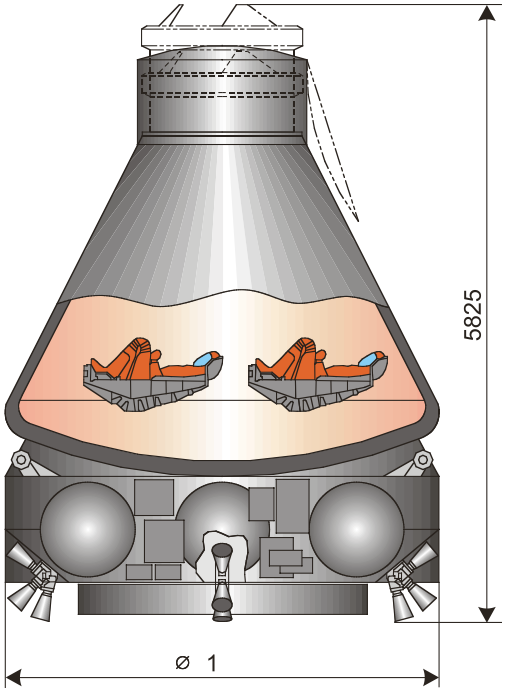
Basic Modules similar to Zvezda Service Module for International Space Station

Khrunichev proposal for Manned Spacecraft





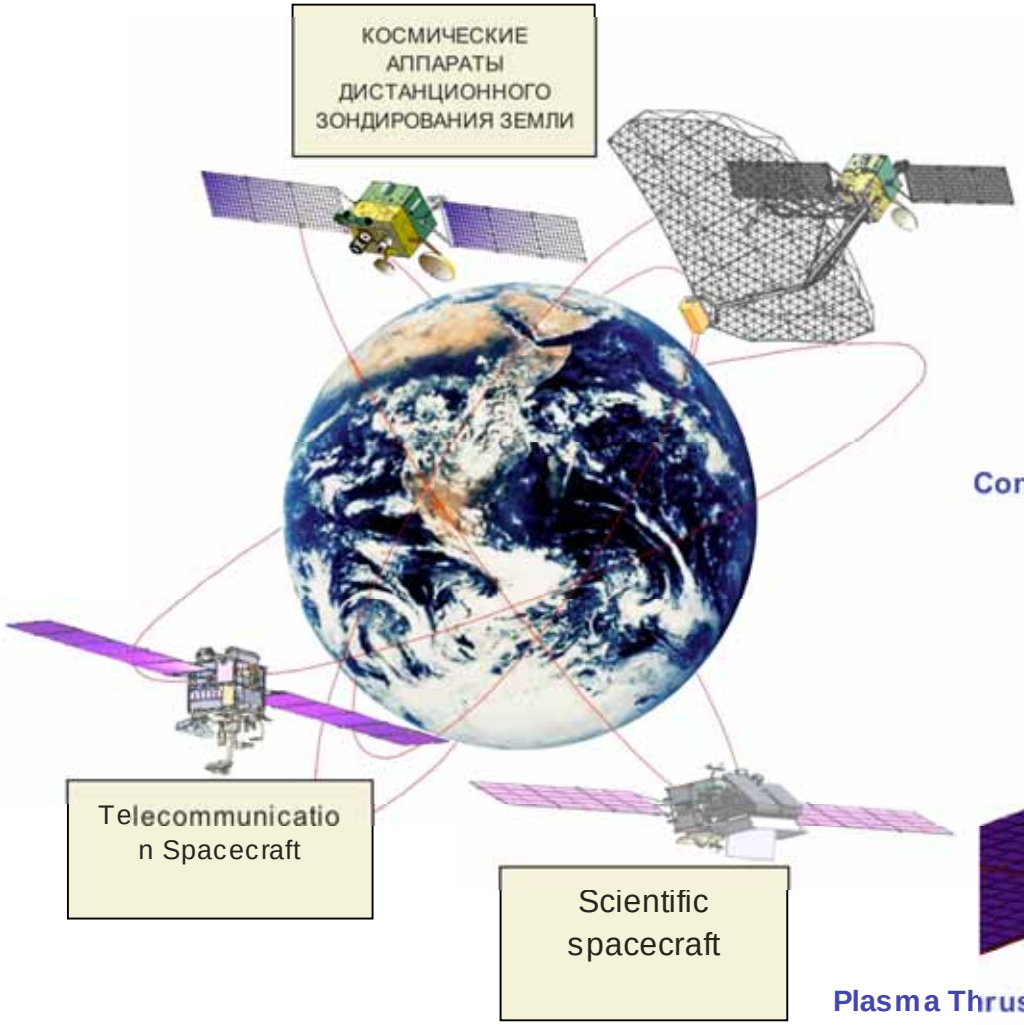
Многоразовый пилотируемый корабль на базе транспортного корабля снабжения



Main Characteristics

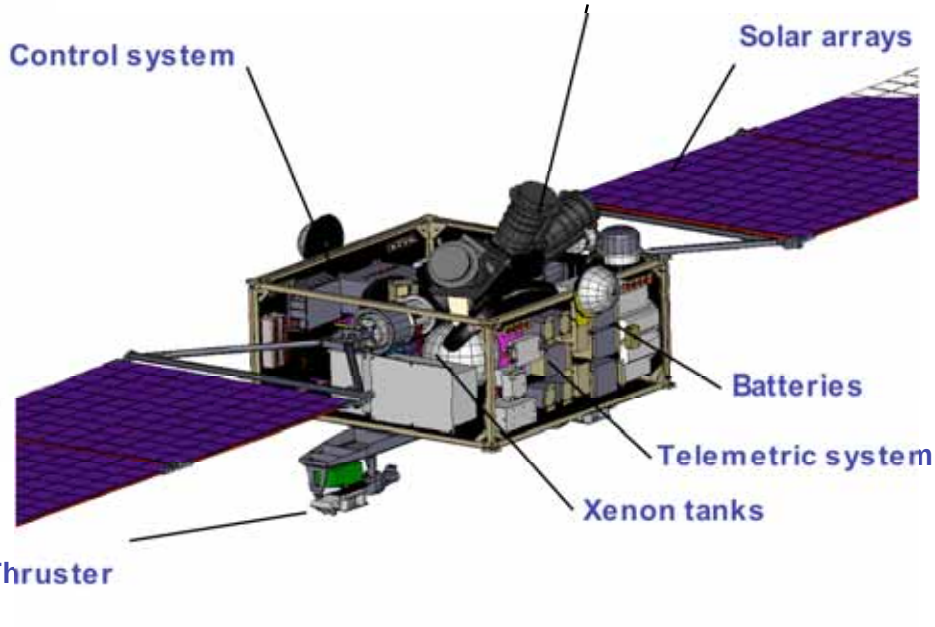
Initial mass	14 t
Crew number	2- 6
Calculated number of flights	10
Payload mass to LEO (cargo option)	6350 kg
Payload mass returned from LEO (cargo option)	1870 кг

Unified Space Bus "Yacht" and Spacecraft on its basis

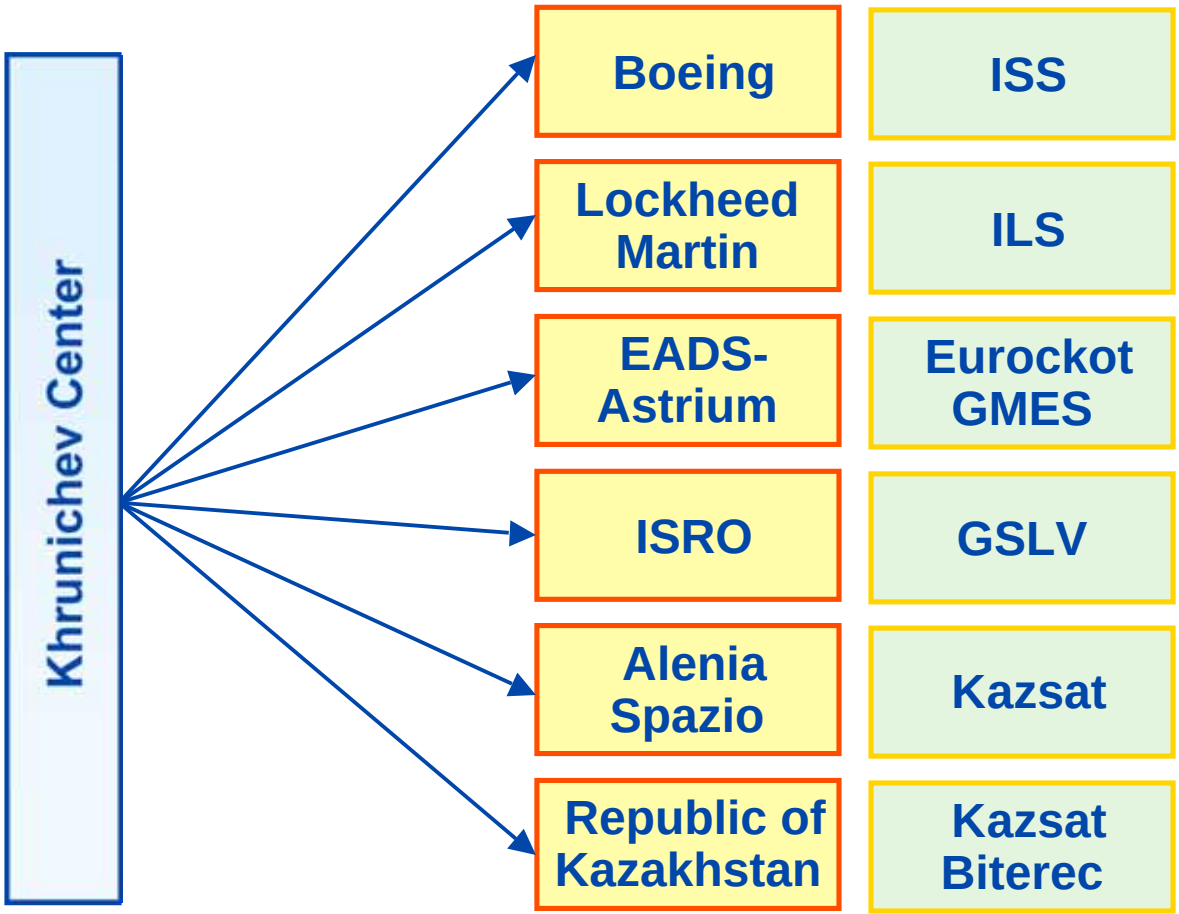


Main characteristics of Unified Space Bus "Yacht"

Bus mass, kg	**350…500**
Main dimensions, m	**1,2×1,2×0,6**
Solar arrays power, k Wt	**1,5...3,9**
Active life time, years	**up to 12**
Calculated reliability during active life time	**0,95**



Khrunichev Participation in International Programs



Interaction and Management Structure