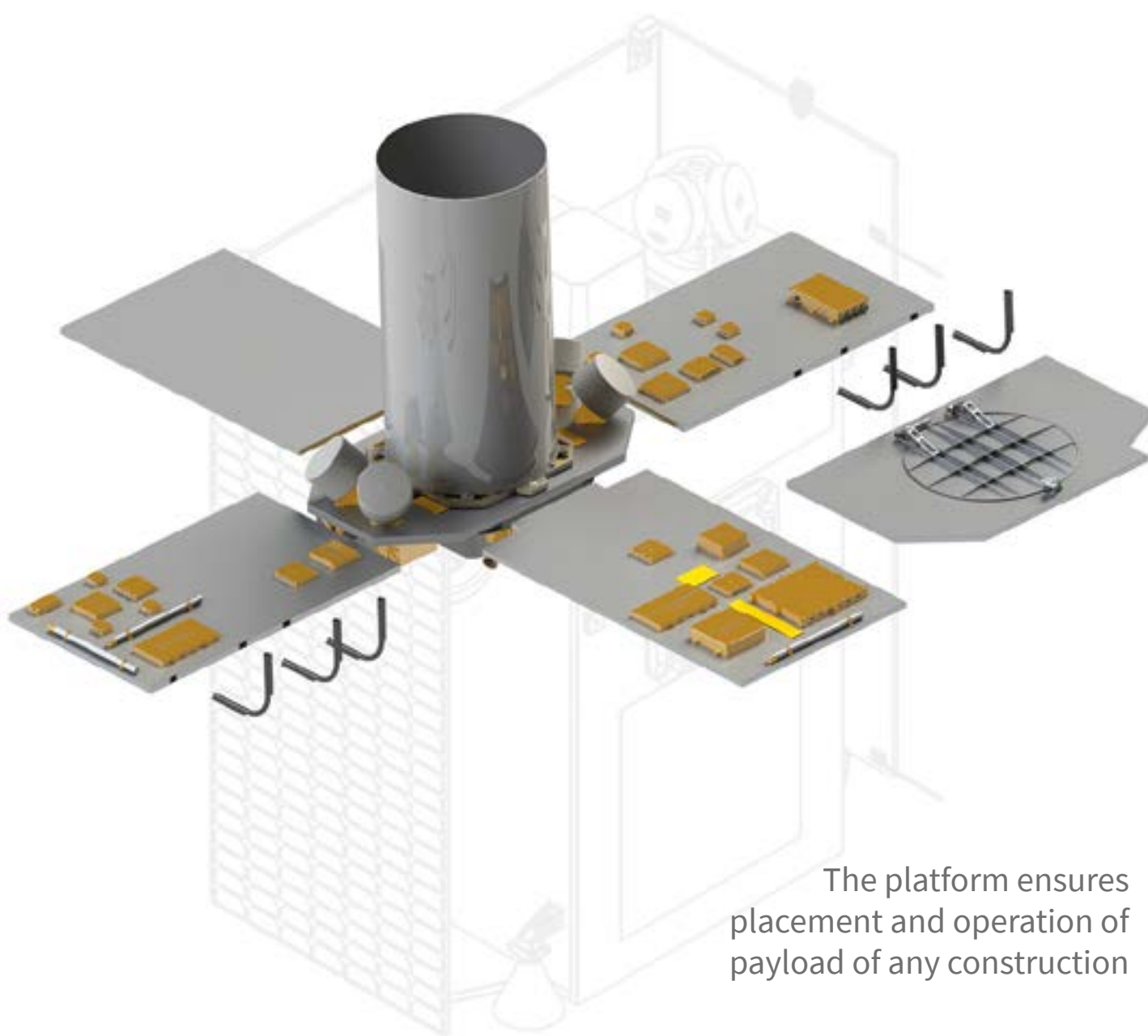


Platform Pallada

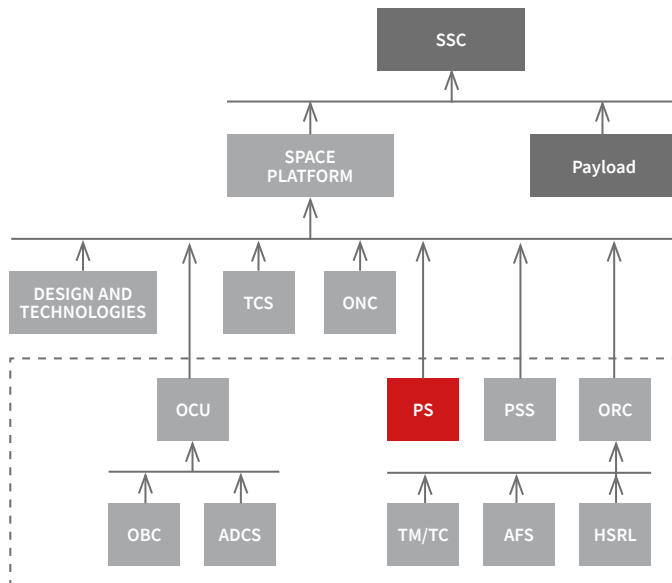


The platform ensures placement and operation of payload of any construction

The space platform under development is based on a standard set of onboard service equipment created by SPUTNIX. A spacecraft for a specific task is created by combining of separate service devices and payload into

a single construct using standard mechanical, electrical and information interfaces. The onboard equipment composition depends on payload characteristics, the operation sequence, the required reliability and a number of other factors.

Pallada-based spacecraft architecture



AFS	- Antenna feeder system
OBC	- On-board computer
ONC	- On-board networking cables
OCU	- On-board control unit
ORC	- On-board radio complex
HSRL	- High speed radio link
PS	- Propulsion system
TM/TC	- Telemetry and Telecommand unit
SSC	- Small spacecraft
Payload	- Payload
ADCS	- Attitude Determination and Control System
TCS	- Temperature control system
PSS	- Power supply system

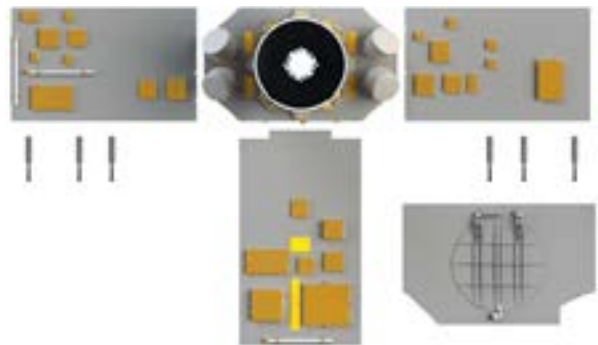
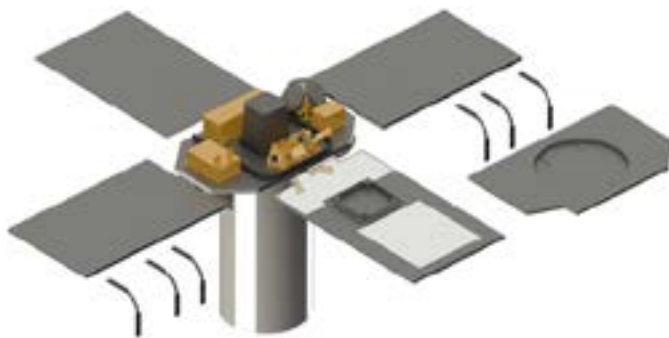


Figure 1. «Pallada» platform with integrated payload

Possible payloads:

- Earth remote sensing (ERS), optical;
- ERS, radar;
- Broadband communications (within constellation);
- M2M data collection and packet transmission (within constellation);
- Equipment for technological experiments;
- Scientific equipment.

To ensure the function of various payloads, the characteristics of the platform's on-board service equipment allow to place additional systems:

- propulsion system (PS) for orbit correction / maintenance;
- equipment for inter-satellite communication for multi-satellite constellations with a minimal ground infrastructure.



Figure 2. ERS spacecraft based on the «Pallada» platform (w/o solar panels)

Pallada-based spacecraft parameters

Operation orbit

Launch method	piggyback or target cluster launch
Type of orbits	LEO, circular
Altitude	500–800 km
Active lifetime	not less than 3 years

Onboard computing complex

Low speed control onboard bus with service systems and payload	CAN2B in accordance with ISO 11898-2
High speed data exchange onboard bus with service systems and payload	SpaceWire in accordance with ECSS-E-ST-50-12C
Onboard information network architecture	in accordance with Sputnix Plug-and-Play Architecture
Onboard software architecture	in accordance with ECSS-E-ST-70-41C
Autonomous operation	up to 7 days

Power supply system

PSS construction	in accordance with Sputnix Plug-and-Play Architecture
Onboard supply voltage	27±2% V
Average PSS capacity	up to 500 W
Maximum PSS capacity	up to 1 000 W

Design and composition

Pallada-based spacecraft composition	in accordance with Sputnix Plug-and-Play Architecture
Mass of spacecraft, in total	80..200 kg
Mass of payload	up to 100 kg
Devices and systems connection	in accordance with Sputnix Plug-and-Play Architecture
Temperature control system	mostly passive

Onboard TM/TC system

Frequency range	2000–2200 MHz (S)
Ground-to-board data rate	up to 1 Mbps
Board-to-ground data rate	up to 0.5 Mbps
TM/TC interface	in accordance with ECSS-E-ST-50C, ECSS-E-ST-70C

Interface with ground payload data receiving complex

Frequency range	8000–8100 MHz (X)
Data rate (*)	800..1500 Mbps
Data transfer standard	DVB-S2

Possible absolute accuracy of ADCS in 3-axis mode relative to inertial coordinate system

Orientation determination	±30"
Orientation maintenance	± 0,05°
Angular velocity maintenance	± 0,001°/c
Navigation parameters vector determination	± 30 m, ± 0.06 m/s

(*) is determined by the capabilities of ground receiving station



SPUTNIX LLC is a Russian private company manufacturing high-tech small satellite components and platforms, as well as ground equipment for smallsat testing, ground-based satellite stations, and equipment for aerospace education. The company is a resident of the Skolkovo Innovation Center.



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