In preparation for future human exploration, we must advance our ability to live and work safely in space, and at the same time, develop technologies to reach the Moon, Mars, and other planets. These new technologies will improve the Nation’s other space activities and may provide applications that could be used to address problems on Earth. The objective of this subtopic is to introduce new technology in the form of new tools, models, and procedures. It is important that the space missions and experiments for biological and physical research be managed using new tools, models, and procedures that improve flight payload integration and associated activities. Proposals are sought for more effective and efficient flight payload logistics, integration, processing, and crew activities. As experiment hardware is developed, concurrent planning for logistics, processing, and for both analytical and physical payload integration must take place. One objective is to minimize crew time required for experiment handling, transfer, installation, and operation through automation, procedural efficiencies, and other means. Some potential areas for payload improvements include, but are not limited to, the following:

- Acoustics, i.e., noise level reduction
- Power requirement reduction
- Electro Magnetic Interference/Electro Magnetic Compatibility (EMI/EMC) reduction
- Thermal control
- Materials usage
- Data control/handling
- Safety
- Test and checkout
- Systems integration
- Logistics
- Automation, robotics, and nanotechnology
- Training