The goal for this subtopic is the development of advanced space technology and concepts to further high-performance science image and data processing. The instrument electronics must operate reliably and effectively for long periods of time in harsh environments. These systems require management of data and products, low power, and radiation.

The objective for this development goal is to elicit novel concepts, architectures, and component technologies that have realistic and achievable potential for flight applications and are responsive to the priority areas of this subtopic. Technologies will be selected based on the potential that their final end products are sustainable (affordable, reliable/safe, and effective) and will advance solutions to the challenges of reusability, modularity, and autonomy.

Priority areas are: reconfigurable/modular implementations; onboard science (data and image) processing and management; and low-power, radiation-resistant electronics. Additional information about the solicited technologies follows:

Onboard Processing

- Hardware technologies and architectures that support instrument science (data and image) processing and that are reconfigurable in flight and modular;

- Hardware-based algorithms for onboard data and image processing of raw science into multiple custom data products. The intent is to minimize onboard bandwidth constraints;

- Autonomous capability of hardware and algorithm management without ground intervention;

- Low-power electronics: in order to provide higher capabilities on smaller and/or less expensive instruments and decrease subsequent thermal load; and

- Radiation resistant electronics (hardware or application).