The subtopic seeks innovative technologies in the following areas:

- ABS part reclamation - decomposing a plastic part (maximum size of 6 cm x 12 cm x 6 cm) and reconstitution into 1.75mm (±0.1mm) diameter wire spools, pellets, or other forms that can be fed into an extrusion device.
- Production of recycled plastic filament while maintaining repeatable, consistent filament diameter of 1.75mm with ±0.1mm tolerance.
• Methods to avoid bulging of feedstock as the filament is created.
• Gravity-independent filament spooling capability: drawing the filament onto a feedstock spool as it is being created without relying on gravity to guide the filament. Goal for spool dimension should be 156mm OD, 48mm ID, 43mm wide.
• Environmental containment for Foreign Object Debris (FOD) and material off-gassing.

For all above technologies, research should be conducted to demonstrate technical feasibility during Phase I and show a path towards Phase II hardware/software demonstration with delivery of a demonstration unit for NASA testing at the completion of the Phase II contract. Demonstration of the Engineering Unit at the end of Phase II may lead to an opportunity for a Phase III contract for a Flight Unit.

Phase I Deliverables - Feasibility study with proposed path forward to develop Engineering Unit in Phase II; study should address how the design will meet flight certification, safety requirements, and operational constraints for spaceflight; and bench top proof-of-concept, including samples and test data, proving the proposed approach to develop a given product (TRL 3-5).

Phase II Deliverables - Functioning Engineering Unit of proposed product, along with full report of development and test data (TRL 5-6).