



NASA SBIR/STTR Successes, Opportunities, and Pathways for EVA

EVA Exploration Workshop
2020

Cinda Chullen
EVA Topic Manager

NASA's SBIR/STTR Program



Small Business Innovation Research (SBIR)

- A set-aside program for small businesses to engage in Federal Research & Development (R&D)

Small Business Technology Transfer (STTR)

- A sister set-aside program to facilitate cooperative R&D between small businesses & U.S. research institutions

SBIR + STTR Programs



Department of Defense (DoD)



Department of Health and Human Services (HHS)



Department of Energy (DoE)



National Aeronautics and Space Administration (NASA)



National Science Foundation (NSF)

SBIR Program Only



Department of Agriculture (USDA)



Department of Education (DoEd)



Department of Transportation (DoT)



Environmental Protection Agency (EPA)



Department of Homeland Security (DHS)



Department of Commerce (DoC)

All with potential for commercialization

or

INFUSION

SBIR/STTR Program Goals



Overall SBIR/STTR Goals

- Stimulate **technological innovation**
- Meet Federal **research and development** needs
- Increase **commercialization application** of innovations
- Foster and encourage participation by:
 - Socially and economically disadvantaged persons &
 - Women-owned businesses

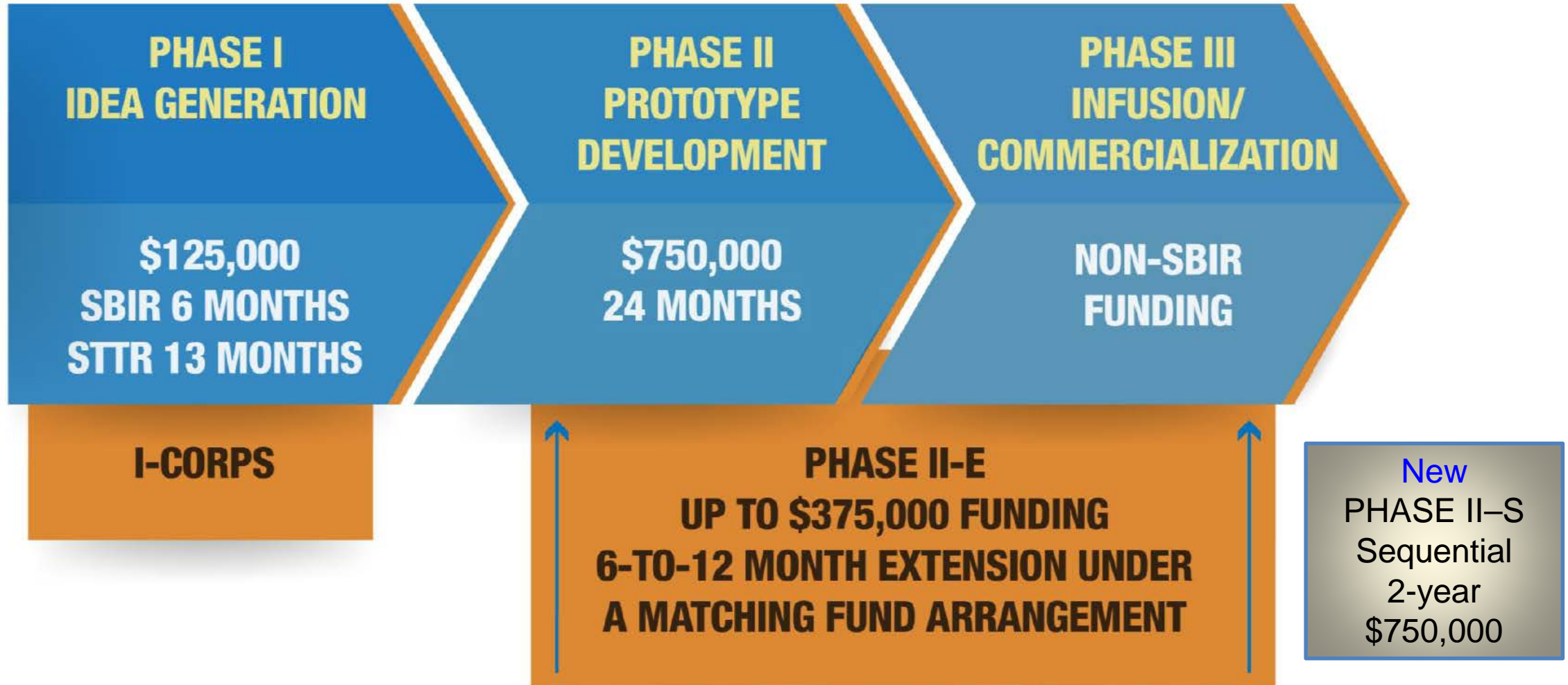
EVA Topic SBIR/STTR Goals

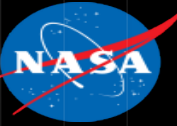
- Address EVA Challenges
- Fill EVA Technology & Knowledge Gaps





NASA SBIR/STTR PROCESS





SBIR/STTR
EVA TOPIC AREA
“SUCCESSSES”



Successes Realized – Current



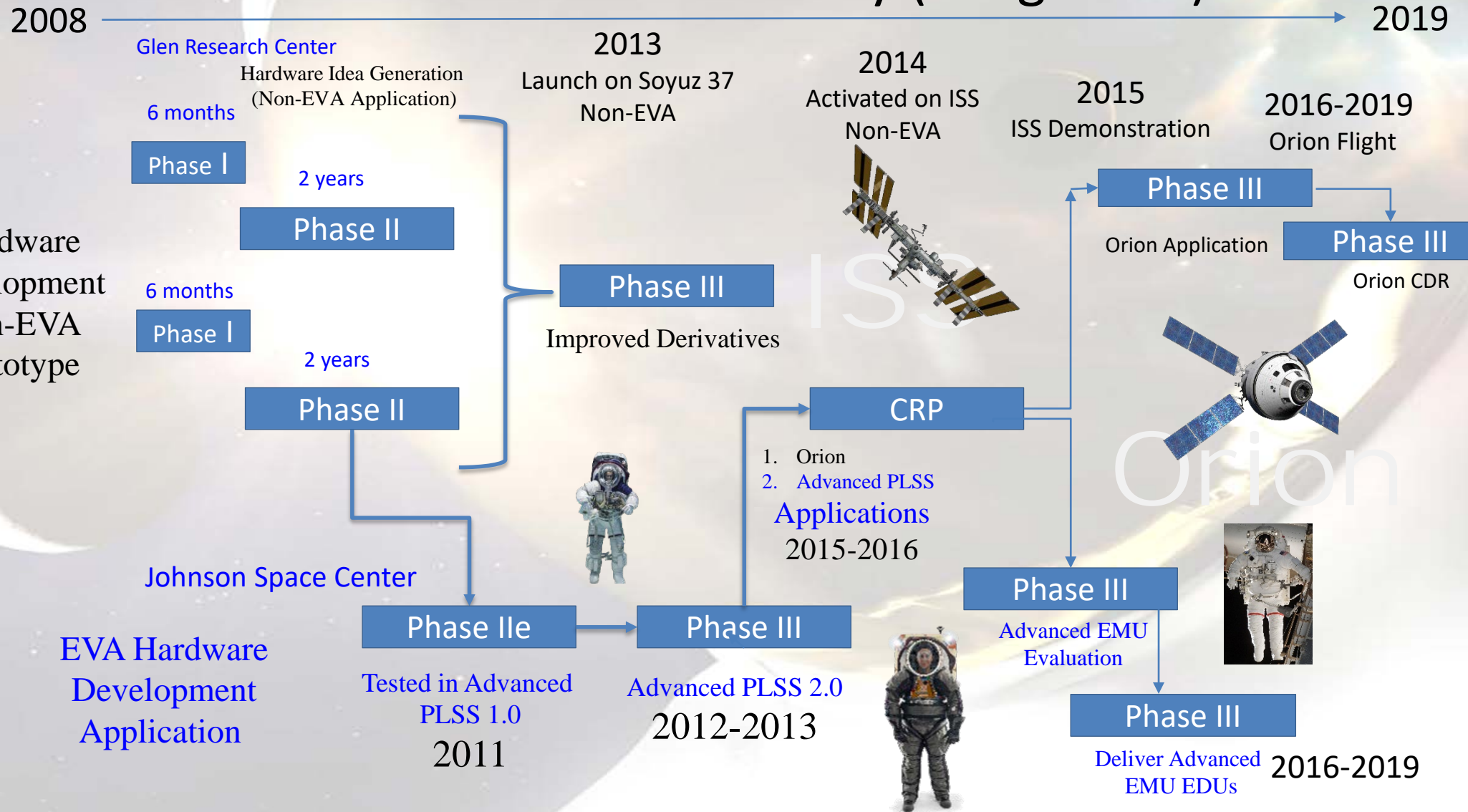
Program	Phase I's	Phase II's	Phase II-E's	Phase II-X's	Phase II-S's	Phase III
SBIRs	2014 (1)	2018 (4)	2016 (2)	2014 (1)		2017 (1)
	2018 (4)			2015 (2)		2018 (1)
	2019 (5)					2019 (1)
STTRs		2016 (1)			2019 (2)	
		2017 (1)				

Total = 26 Contracts
Value ~ > \$14M

SBIR Infusion Path



Vendor A Success Story (Long-Term)



SBIR Infusion Path



Vendor B Success Story (Short-Term)

2017 —————→ 2023

Johnson Space Center

6 months

Phase I

Skipped
Phase II

Phase III + Options

Multiple DVT Units
Multiple Versions
xPLSS Application

EVA xPLSS
Hardware Development
Application

ISS



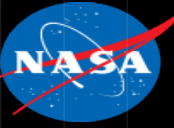
xEMU Demo

Initial Surface



xEMU Sustained





SBIR/STTR
EVA TOPIC AREA
“OPPORTUNITIES”

GO TO



<https://sbir.gsfc.nasa.gov/>



NASA SBIR AND STTR PROGRAM SOLICITATION 2020



Jan 21–Mar 20



SBIR/STTR

Small Business Innovation Research / Small Business Technology Transfer

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Opened on January 21, 2020 and closes on March 20, 2020



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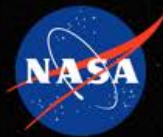
[Proposal Submission EHB](#)



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- [Chapter 9](#), Research Topics for SBIR and STTR

- Appendix A: [Technology Readiness Level \(TRL\) Descriptions](#)
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Curator: [Samidha Manu](#)

NASA Official: Mr. Carlos Torrez

Last Updated: 11-Feb-2020



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View by Focus Area Mission Directorate



Legend Subtopic Pointers Subtopic has been amended

Expand All

Introduction

The SBIR subtopics are organized by Mission Directorate(s).

Subtopic numbering conventions from previous year's solicitations have been maintained for traceability of like-subtopics from previous solicitations. The mapping is as follows:

A – Aeronautics Research Mission Directorate

H – Human Exploration and Operations Mission Directorate

S – Science Mission Directorate

Z – Space Technology Mission Directorate

T – Small Business Technology Transfer

Related subtopic pointers are identified when applicable in the subtopic headers to assist proposers with identifying related subtopics that also potentially seek related technologies for different customers or applications. As stated in Section 3.1, an offeror shall not submit the same (or substantially equivalent) proposal to more than one subtopic. It is the offeror's responsibility to select which subtopic to propose to.

SBIR/STTR Research Topics by Mission Directorate

Space Technology PDF

Science PDF

Human Exploration and Operations PDF

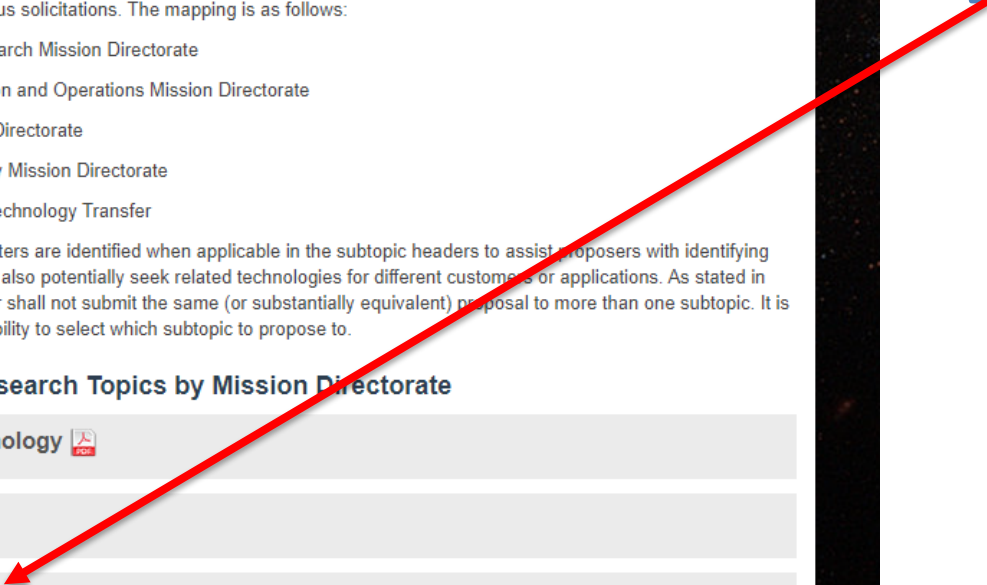
Aeronautics Research PDF

Small Business Technology Transfer PDF

Legend Subtopic Pointers Subtopic has been amended

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View by Focus Area Mission Directorate



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Human Exploration and Operations PDF

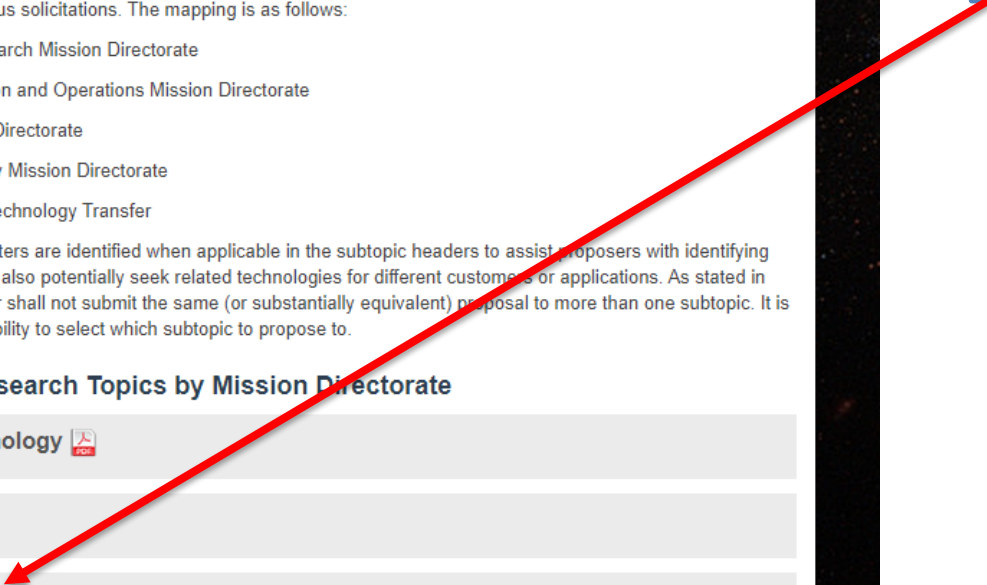
Aeronautics Research PDF

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PREVIOUS CHAPTER

Three Specific SBIR Subtopic Opportunities



[Click Here](#)

H3.03 Lunar Dust

[H3.03 Lunar Dust Management Technology for Spacecraft Atmospheres and Spacesuits](#)  

 [Z13.01 Z13.02](#)

Lead Center: GRC

Participating Center(s): JSC, MSFC

Technology Area: TA6 Human Health, Life Support and Habitation Systems


Scope Description Upon their return to Earth one of the Apollo astronauts commented that "dust is probably one of our greatest inhibitors to a nominal operation on the Moon."Advances in spacecraft atmospheric quality management are sought to address the intrusion and containment of lunar dust in...

[Read more>>](#)



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H4.01 xPLSS
Component Challenges

[H4.01 Exploration Portable Life Support System Component Challenges](#)  

Lead Center: JSC


Technology Area: TA15 Aeronautics

As the design for the new Exploration Extra-vehicular Mobility Unit (xEMU) is developed, there are obvious gaps in technologies, which need to be fulfilled to meet the new exploration requirements. Various Exploration Portable Life Support System (xPLSS) Hatch components are at a stall in technology... [Read more>>](#)



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H4.05 LCVG & Glove
Humidity Reduction

[H4.05 Liquid Cooling and Ventilation Garment Connector Upgrade and Glove Humidity Reduction](#)  

Lead Center: JSC

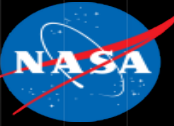
Technology Area: TA6 Human Health, Life Support and Habitation Systems

Scope Title Liquid Cooling and Ventilation Garment (LCVG) water loop connector upgrade and glove humidity reduction Scope Description LCVG water connector upgrade:The connector of the liquid cooling and ventilation garment (LCVG) for the space suit has been a source of failures in the current... [Read more>>](#)

Black Out
in effect
during solicitation!



No STTRs
this Cycle
for
EVA Topic Area

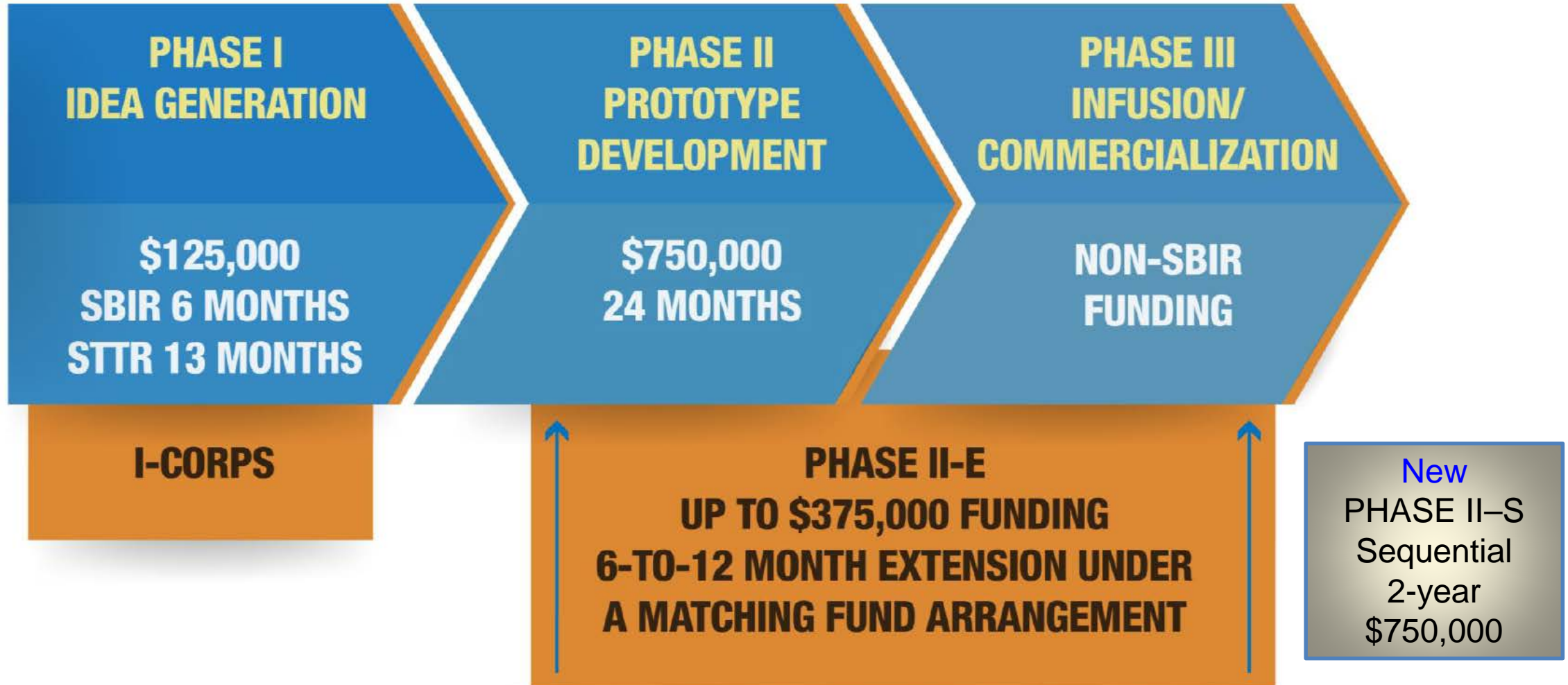


**SBIR/STTR
EVA TOPIC AREA
“PATHWAYS”**

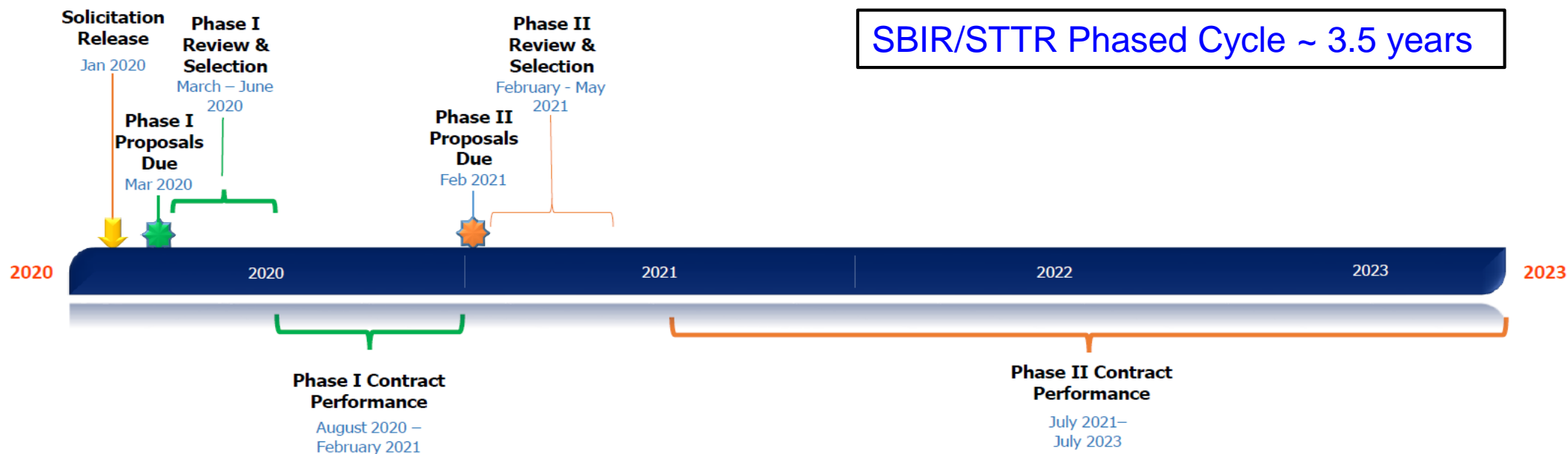
NASA SBIR/STTR Pathways



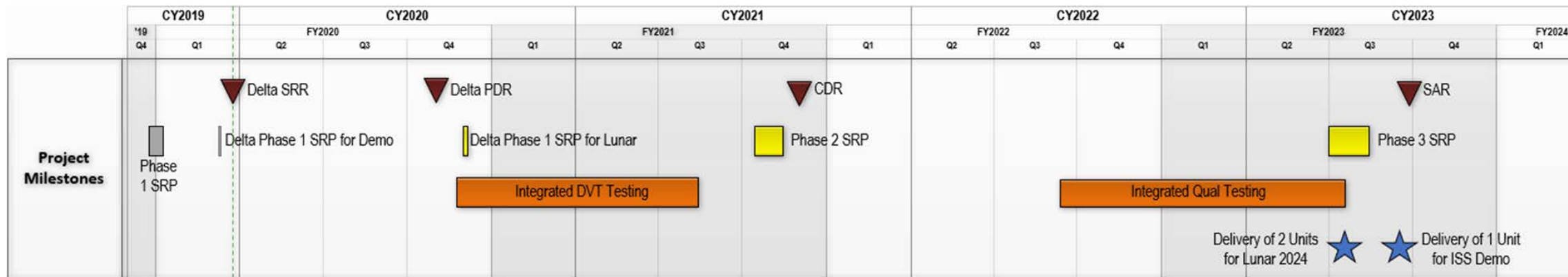
NASA SBIR/STTR PROCESS



Schedule (2020-2023 Pathway)



xEMU Project Schedule ~ 3.5 years



Tips for Success (cont.)



- Visit the SBIR/STTR Website regularly

<https://sbir.gsfc.nasa.gov/>

- Attend workshops and conferences

- International Conference on Environmental Systems (ICES) <https://www.ices.space/>
- SBIR/STTR Industry Day
- **EVA Workshop**

- Subscribe to the SBIR/STTR News

- Get familiar with 2020 Technology Taxonomy

(Replaces NASA Technology Roadmaps)

<https://www.nasa.gov/offices/oct/taxonomy/index.html>



Figure 1. The second-level breakdown of the structure used in the 2020 Technology Taxonomy. This document contains details at the third level, with fourth-level technology examples provided in all cases.

Tips for success



BE AWARE!!!

• If you win a SBIR/STTR contract

- Deliver all products on time or ahead of schedule
- Hardware, testing, and data is good in Phase I's and Phase II's.
- **Communicate, Communicate, Communicate** with your Contracting Officer Representative
- **READ, READ, READ** your contract
 - There are deadlines for Post Phase II Opportunities
- **READ, READ, READ** your SBIR/STTR Emails
 - New opportunities may present themselves this way

• **Avoid Black-Out:** Be cautious during Phase I Solicitations

- Once proposal period starts, the black-out period begins
- Discussions on specific subtopics are no longer allowed

• If you have a good idea or potential solutions to any of the technology needs/gaps, we want to hear about it!



Points of Contact



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