HR0011SB20254-08
Inertially Scaled Aircraft (ISaAc)
Frequently Asked Questions (FAQs)

1. What flight speed is required for this topic?
   A: Subsonic at sufficiently high Reynolds number to demonstrate appropriate physics.

2. Is aerodynamics a priority over propulsion? Absolutely.
   A: We do not envision propulsion development as part of this effort.

3. If supersonic speed is required, does the material for the scaled aircraft need to be similar to that of the full-scale plane?
   A: Supersonic speed is neither required nor encouraged.

4. Some inertially scaled UAVs are sized and used in specific wind tunnels and may be partially constrained or tethered depending on the technical objectives. Does DARPA envision only a 6-DOF free-flight inertially scaled UAV with this DP2?
   A: Yes

5. Subscale unmanned air vehicles are usually sized, designed, fabricated and inertially scaled to investigate very specific flight characteristics at certain flight condition/environment for the specific full-scale target aircraft. Does DARPA have an intended target full-scale aircraft for this DP2?
   A: No
   And what flight regime(s) will the inertially scaled UAV be tested or demonstrate?
   A: That is something the offeror is expected to recommend

6. Will the inertially scaled UAV be "powered" to provide thrust or lift?
   A: Yes

7. Will the inertially scaled UAV along with its avionics and instrumentation become deliverables to DARPA or will it remain the property of the proposing firm?
   A: DARPA will not take ownership

8. Will DARPA provide access to flight test facilities and flight test support services such as launch/recovery, telemetry, datalink, videography, and require TRB/SRB, etc.
   A: No

9. The solicitation states "Develop and flight test a small (55 to 300 lbs.) unmanned air vehicle (UAV) …". Would a larger vehicle (e.g. 600 lb) be acceptable?
   A: No

10. What level of geometric and/or aerodynamic similarity are of interest? For instance, should all dimensions be geometrically scaled or can some dimensions such as the wing thickness/airfoil be modified?
    A: That is at the discretion of the proposer

11. Would inertia need to be adjusted in flight (dumping mass, moving fuel, etc)?
    A: That is at the discretion of the proposer

12. For the purpose of this solicitation, is there is quantitative definition of "inertial scaling"?

A: No

13. Will DARPA provide any data or assistance with acquiring performance data of specific target aircraft that an offeror can compare their scaled model against?
    A: No

14. Which aspects of dynamic similitude are desired to be matched? Dynamic similitude is difficult to achieve in all motions and is typically precisely targeted.
    A: That is at the discretion of the proposer

15. Is aeroelastic scaling required/desired?
    A: No

16. What is the background of this solicitation? Is there a Phase I solicitation that relates directly to it?
    A: No, it is Direct to Phase II. Feasibility/proof of concept documentation must stem from R&D performed outside the SBIR/STTR programs.

17. Also, when using the term "inertially scaled", is this predicated on a successful "rigid" or "aeroelastic" implementation?
    A: Inertial scaling refers to rigid body dynamics and we do not envision the work capturing aeroelastic effects.