

**RFI FOR DESIGN ASSEMBLY TEST AND MANUFACTURE OF PICO OR
NANOSATELLITES**

NASA Ames Research Center (ARC)

Reference Number: NNA11SWARMSAT-L

Question and Answer Set 1 to the RFI

Q1: Does the \$4k per assembly included assembly alone or purchasing of parts?

A1: The \$4k assembly target refers to assembly costs, including any components the respondent would need. NASA ARC intends to have a separate budget for purchasing the spacecraft components that make up the cubesats. If a contract was awarded, NASA ARC would intend to transfer the components to the contractor for assembly and test.

Q2: Does the \$4k per assembly include other costs?

A2: ARC is interested in understanding whether parts of environmental testing process can be integrated into the assembly line / process. Costs associated with items such as thermal testing, vibration testing, or RF testing can exceed the \$4k target.

Q3: Are the 2 Mpixel camera and magnetometer part of the fixed payload or will optional payloads be included?

A3: The 2 MPixel camera and magnetometer are part of the baseline fixed avionics package. ARC is interested in two payload options: The first in which a single Radio Frequency (RF) processing card is integrated on all 100 nanosats. The second in which the RF processing card is available on 1/2 the nanosats and a second payload card that monitors voltage levels on a probe. Each payload individually consumes around 0.4U (95 mm x 95 mm x 40 mm) volume. The payloads are not considered optional in that each nanosat will have one payload, but they are external to the primary processing card.

Q4: The RFI states that manufacturing should be at a fraction of the cost of current nanosatellites. Respondent cannot find similar examples. Can examples be provided for such manufacture?

A4: An example of design to manufacture is provided, at large scale, by the Iridium constellation, in which emphasizing a process based design system resulted in assembly time being reduced from 10 - 12 months to 1 - 2 weeks. No real historical analogies exist for nanosatellites. ARC anticipates that by performing assembly and qualification in parallel, manufacturing can be accomplished at a per-unit cost, which is a fraction (~1/10) of the current cost for integrating single unit quantities of pico or nanosatellites.

End of Question and Answer Set 1 to the RFI