



S²MARTS Project 21-07: Rapid Assurance Microelectronics Prototype - Commercial

Request For Solutions (RFS) Questions & Answers | Posted February 8, 2021

Questions related to Fab Companies:

1. Question: You mentioned, its highly encouraged for fabless companies to participate but for commercial viability the needs of DOD programs are very small - comments?

Response: Commercial production volume is required for sustainment of any leading edge foundry as DoD volume is extremely low compared to commercial volumes.

2. Question: What is the role of DoD in ensuring domestic fabs can be competitive and achieve the needed scale?

Response: RAMP-C phase 1 is to assist in the development of IP and PDK as outlined in the RFS. Phase 2 and 3 will require additional government investments as outlined in the 2021 NDAA.

3. Question: While the RFS is not focused on the DIB, can the DIB participate as a sub-contractor to a commercial company?

Response: There are no restrictions on DIB participation; however, the focus is on commercial/dual-use leading-edge solutions.

4. Question: Is it encouraged to have DIB partner on the team?

Response: There are no restrictions on DIB participation; however, the focus is on commercial/dual-use leading-edge solutions.

5. Question: What incentive do fabless companies have to source in the US? How does this program address this?

Response: A few of the benefits could include supply chain security and access, different IP exposure profile and lower susceptibility to geo-political affairs. This program is meant to serve as a pilot to help fabless companies evaluate that possibility through proto-type development.

6. Question: Does a Fabless company need to team with a fab to make a response? Will you be providing fab teaming introductions?

Response: Either team or be able to demonstrate a business relationship showing collaboration across all the tasks. The Government will not be making introductions and would request that those companies work together for a complete solution.

7. Question: For fabless companies willing to participate - is the expectation to use the SHIP approved packaging and test center?

Response: The use of the SHIP approved packaging and test center is not required.

8. Question: For fabless companies that are not on US Fab nodes (but have their products on much advanced nodes) what are your comments?

Response: Per the RFS we are seeking on-shore nodes $\leq 7\text{nm}$.

9. Question: Are fabless company design team(s) able to lead a RFS response?

Response: Yes, as long as the full team is able to meet the full RFS requirements and all sub-phases.

Questions related to Technology Node and SOTA

10. Question: What is the definition of leading edge CMOS? What node is required?

Response: Per the RFS $< 7\text{nm}$, and that is what is required.

11. Question: How is ITAR and government flow related to commercial access? Do we already have commercial access to SOTA?

Response: The majority of chips used in DoD systems are not ITAR, they are dual-use COTS. This effort is to enable access to an on-shore leading foundry ($\leq 7\text{nm}$) for supply chain risk reduction.

12. Question: When does this SOTA capability have to be available for production?

Response: The production is outside of the scope of this OTA effort. Phase 2 and Phase 3 are briefly mentioned and will be dependent on additional funding as described in the FY2021 NDAA.

13. Question: Please define OSD view of US SOTA, based on current us landscape

Response: Definition of SOTA as was used in the RAMP RFS is $\leq 22\text{nm}$, definition of leading edge per the RAMP-C RFS is $\leq 7\text{nm}$.

14. Question: What level of maturity must the US based foundry have for 7 nm and below? Must it already have a commercially release process?

Response: For phase 1, the maturity would be that of a foundry bring-up for initial test chip for evaluation. This would transition to a maturity level supporting high commercial volume production by the end of phase 3.

15. Question: Is the expectation that the model developed for digital CMOS would then also be applied to other technologies of domestic interest?

Response: That is possible if a successful public-private partnership can be demonstrated as a viable model for other critical areas of interest.

16. Question: What is a commercial foundry? What ECCNs need to be supported?

Response: The foundry model would be that of a pure play or merchant foundry available to produce product for multiple fabless design companies. As commercially operated foundry focused on COTS and dual-use parts, EAR99 would apply, however specific designs being produced might have to be evaluated for any restrictions.

17. Question: what node is considered SOTA?

Response: Definition of SOTA as was used in the RAMP RFS is $\leq 22\text{nm}$, definition of leading edge per the RAMP-C RFS is $\leq 7\text{nm}$.

18. Question: Please define SOTA relative to us landscape

Response: Definition of SOTA as was used in the RAMP RFS is $\leq 22\text{nm}$, definition of leading edge per the RAMP-C RFS is $\leq 7\text{nm}$.

Questions related to Quantifiable Assurance:

19. Question: Describe your view of integration with RAMP, from design to QA.

Response: While RAMP is focused on Government purpose use chips, QA methods and processes developed under RAMP could be applicable to RAMP-C. However, there is no direct requirement in the RAMP-C RFS to implement specific QA methods and processes.

20. Question: The RFS mentions quantifiable assurance. Will the gov't provide the QA framework, or is the RFS seeking innovative QA solutions as a component of our response?

Response: The Government is developing standards and supporting information that will be made available to the RAMP-C performers. A primary objective of RAMP-C in this area will be to understand and leverage commercial best practices used to optimize yield and reliability and apply for ensuring integrity and confidentiality.

21. Question: Should we assume QA is defined by RAMP?

Response: No, RAMP is addressing Government specific designs while RAMP-C is addressing commercial dual-use chips. These are different operational risk models and design/production flows.

22. Question: The RFS mentions quantifiable assurance. Will the gov't provide the QA framework, or is the RFS seeking innovative QA solutions as a component of our response?

Response: The Government is developing standards and supporting information that will be made available to the RAMP-C performers. A primary objective of RAMP-C in this area will be to understand and leverage commercial best practices used to optimize yield and reliability and apply for ensuring integrity and confidentiality.

23. Question: Does the incorporation of Quantifiable Assurance imply OSD's desire to use QA processes and technologies already developed by the government? Thank you.

Response: see question 19, 20, 21 and 22.

24. Question: Does the incorporation of Quantifiable Assurance imply OSD's desire to use QA processes and technologies already developed by the government? Thank you.

Response: see question 19, 20, 21 and 22.

Questions related to RAMP and/or SHIP:

25. Question: If you are a newcomer to RAMP/RAMP-C, must formal relationships be established prior to proposal submission?

Response: Formal relationships would not be required but the Government would encourage some type of business arrangements be made in order for these two programs to better align to objectives such as discussed in the area of QA .

26. Question: How does the political situation (new govt) affect this RAMPC initiative?

Response: There has been no impact on the RAMP-C RFS or objectives.

27. Question: With RAMP RFD , is there synergy with RAM C plan

Response: There could be depending on purposed teaming and selected performers, but that is not a requirement from the RFS.

Questions related to Schedule/Award:

28. Question: WHAT Is the SCHEDULE for submission?

Response: Proposals are Due 17-March.

29. Question: I have heard that the schedule has been extended beyond mid feb

Response: Yes, extended to 17-March.

30. Question: Will there be multiple awards?

Response: Currently not planned but the Government has the option to fund multiple awards based on funding and responses.

31. Question: What is the schedule for answers to other submitted questions?

Response: Answers will be provided on the website as soon as possible. Planned date is 8-February.

Other Questions:

32. Question: Will DoD be able to sustain this long-term?

Response: The reason to team with fabless design companies is to enable sufficient commercial volume for sustainability and to give them an on-shore option.

33. Question: What state of maturing must the PDK be for using in the design? Must the PDK already be released commercially?

Response: A PDK matured for commercial use would be ideal for lowering risk and shortening development time.

34. Question: We have heard that ITAR/ classified info capabilities aren't required. The DD 254 includes language contradicting that assertion. Will an update be put out?

Response: The DD254 and ITAR/Classified capability is not required at award. This DD254 was put in place as an option for sponsoring security clearances for counterintelligence and supply chain threat focused discussions if necessary.

35. Question: Should custom IC design teams/groups from defense Primes submit, if so in what role?

Response: They would have to team with a commercial fabless design company or otherwise provide sufficient expertise and experience to address a given task.

36. Question: What standards and market incentives are tied to this project? What is the status of Sec. 224

Response: The Sec 224 standards are in development and a draft version will be shared with the performer once under Gov contract. The standards will be made widely available once they have gone through the formal Gov issuance process.

37. Question: Is the intent to reshore existing design to a US foundry, or new designs/next generation designs not yet approaching production?

Response: It could be either as long as it targets a ≤ 7 nm node with the potential for high commercial production volume.

38. Question: Are there military reliability or environmental requirements that need to be addressed?

Response: The proto-types developed would have to meet commercial requirements for that particular product. Depending on application, it could have more demanding requirements such as automotive.

39. Question: Is there any role for the DIB for RAMP-C?

Response: There are no restrictions on DIB participation; however, the focus is on commercial/dual-use leading-edge solutions.

40. Question: Are foreign nationals (including Chinese nationals) allowed to participate on these design teams?

Response: There are no restrictions on foreign nationals.

41. Question: Does the requirements for a US based foundry include having the IC masks made in the US?

Response: Yes.

42. Question: RFS page 11 mentions Task 4 sub-phase 1a-1d as \$20M per design (3 designs). Is this 3 testchip designs?

Response: The requirement is 1 test chip design per design team.