S²MARTS Project: 22-02 Dynamic Spectrum Management @ B5G Tactical Edge
Project TalX Question & Answer | Date: April 4, 2022

1. Question: Is the government team engaged with the PATHSS working group being run by the National Spectrum Consortium, chaired by DoD CIO?

Answer: OUSD is aware of NSC and DoD CIO. OUSD R&E and CIO will coordinate integration of DoD solution approaches for spectrum sharing in band of interest

2. Question: Similar to CBRS, are we going to have Primary/Secondary users for this 3.1 to 3.55 GHz spectrum? Is there a third type of users also, like the GAA type of CBRS?

Answer: This is left up to the proposing team to decide. If you team is designing a bi-directional system then it may be worth a consideration to account for many user groups. This is similar to if you have a uni-directional system and multiple incumbents.

3. Question: What is the preference of managing such functionality, through SAS or through RIC or any new interface?

Answer: This is left up to the proposing team to decide.

4. Question: Would this spectrum use management be regulated by someone entity (like Winn forum)?

Answer: Intent is to investigate possible systems to allow for spectrum sharing. Eventually once the systems are mature the USG intends to approach the current spectrum managers and standards boards and propose exemptions be made for use of these technologies.

5. Question: Are these decisions required to taken by some external entity (not by the gNB) when to acquire/release the channels (similar to SAS)?

Answer: This is left up to the proposing team to decide.

6. Question: As "5G Channel Evacuation Time" requirement is <5s, to achieve this requirement can we go with FORCE shutdown of cell (w/o moving out the calls gracefully)?

Answer: Proposer is allowed to offer this type of solution. Solution sets that offer "graceful" shutdowns or maintain 5G network throughput are preferred. We recommend that the proposers explain their reasoning and give a benefits analysis of their approach.

7. Question: How many subscribers/UEs are expected in a cell? More the number, then it is difficult to move them all gracefully with in the stipulated time of 5 secs.

Answer: This is left to the proposing team. These are the sort of system dimensioning that the solution provider needs to quantify in support of maturing their design. It is expected that the proposer will explain the scale of their design and discuss the pros and cons of the design.

8. Question: What types of federal systems are you most concerned with? The band identified in the RFS was 3.1 - 3.55 GHz which is mostly radar. Are other systems included?

Answer: All incumbents in the band are included. There is a large variety and Radars are included.

9. Question: What is the DoD expectation for contract award time frame?

Answer: Contract Award will be before the end of FY22 (Sept 30, 2022).

10. Question: For Phase 2 laboratory, is there a test bed 5G network lab system that will be GFE? Is this required by the bidder to use?

Answer: No there will not be a GFE furnished testbed for Phase II lab demos, therefore the cost of such HW and SW for lab testing should be accounted for in each proposal.

11. Question: In phase 2, is the lab used for demoing a supplier facility or DoD facility?

Answer: This is left to the proposer. If a team would like to use a DoD facility, they need to discuss it and provide their plans and associated costs for using the facilities. It is expected that either the team has the needed contacts to schedule time at the facility or they will request assistance to use the facility from the USG team.

12. Question: The RFS mentions sharing with friendly host nation 5G. Do you envision a result of this effort to be a module for installation in a host nation 5G network?

Answer: At this time, because this is 6.2 money research, it is too early to have clear expectations of deployments for any proposed technologies.

13. Question: Is the overall goal of this program looking towards spectrum sharing domestically to solve a congested EMOE or an operational capability in a contested EMOE?

Answer: Proposed solution should be intended for addressing both congested and contested environments.

14. Question: "With in 1 sec, what reports required from gNB CU/DU or from UE via gNB?

Answer: Use the same definition for ESC time for detection that is used within the CBRS requirements at CBRS.wirelessinnovation.org.

15. Question: For Phase 2: Does the delivery also expect a leave behind lab system? The RFS states a report for deliverable.

Answer: This is left up to the proposers. Please indicate in your proposal if your team is planning to keep or deliver your prototype at the end of phase 2.

16. Question: What assumptions can we make about the DoD Spectrum dependent systems? what aspects of the incumbent systems can we assume to be controlled by the DSM system?

Answer: "No DoD incumbents will be provided and no technical information on the incumbents will be provided. Intent of the project is to propose a new set of standards that would apply to the DoD incumbents and to the network. Intent is to capture standards that would account for the different types of incumbents, radios, radars, EW systems, etc, that may be seen in the band of interest. There is no intent for the proposed solution to integrate into a currently fielded DoD system. Assumptions of what DoD aspects the DSM can control should be part of the proposed design, keeping in mind the goals of maximizing performance of both the DoD and the 5G systems, while consideration is given to overall technical feasibility."

17. Question: Do we also need continuous sensing for Federal/Defense gNBs…e.g. NMM (Scan) kind of functionality at gNB?

Answer: This is an implementation specific question, and we advise to refer to the primary focus points in the RFS.

18. Question: Is ASIC development expected at any point of this program?

Answer: ASIC development is not expected to be required for this project. However, if there is a Novel use case for ASICs to be used with Dynamic Spectrum Sharing systems this team would like to hear about it and see a proposal.

19. Question: Can you confirm the supplier proposal shall include ph 1 & 2 only? And that ph 3 proposal will come later on once requirements are available during phase 2?

Answer: Yes, it is expected that proposers provide proposals that cover phases 1 and 2. Requirements for phase 3 will be released halfway through phase 2 and there will be another round of proposals for phase 3 work.

20. Question: Will the $15M award be divided by awarded participants? Or is $15M awarded to each participant?

Answer: $15 million to be divided among the awarded participants.

21. Question: Please define (near) RT-RIC.

Answer: Please refer to definitions on the O-RAN Alliance website https://docs.o-ran-sc.org/en/latest/architecture/architecture.html

22. Question: Is an existing USG 5G testbed that we need to integrate and demonstrate the DSM solution? If not then where do you expect us to conduct these demonstrations? A: The specific DoD system and location will be specified later.

Answer: These are requirements specific to phase 3. They will be defined in the last half of phase 2.

23. Question: How will the slides presented today be shared?

Answer: Yes, slides are made available through NSTXL's community board. Please visit: https://community.nstxl.org

24. Question: May academic groups submit to this opportunity?

Answer: Yes, academic groups are allowed to submit.

25. Question: What types of Federal systems are of most interest to share with? Radar, comms, EW, etc?

Answer: All incumbents in the band are included. There is a large variety and Radars are included.

26. Question: Are the vendors to bid for all three phases or just 1&2 at this time?

Answer: Yes, it is expected that proposers provide proposals that cover phases 1 and 2. Requirements for phase 3 will be released halfway through phase 2 and there will be another round of proposals for phase 3 work.

27. Question: Are advisors to the government covered by NDAs? The advisors are listed, but there's no statement about their agreement or involvement beyond evaluation.

Answer: Advisers that are supporting the program are covered by NDAs. In addition, listed in the RFS, there is a list of companies that will be supplying advisers for the proposal evaluation. These advisers will undergo a second NDA that is specific to just the proposal evaluation.

28. Question: Do the stated RFS security restrictions exclude the participation of subcontractors or suppliers that are not US based?

Answer: Foreign companies may participate as teaming partners/sub-performers. Disclosure of CUI to foreign partners must comply with DoDI 5200.48 section 3.9 which in turn requires compliance with DoDD 5230.20 and DoDIs 8500.01 and 5200.02.

29. Question: Will an ATO be required to perform a demonstration using the test network?

Answer: I assume you mean ATO = Authority To Operate. A requirement for an ATO would not be required until Phase III, and requirements for Phase III are TBD within 6 months of Phase II start. However, it is anticipated that IB5G would work with you on any needed ATO items.

30. Question: Are you looking for sharing between DoD operated 5G systems and other DoD assets, between commercial 5G and DoD assets, or all of the above?

Answer: All of the above.

31. Question: Is the bidirectional interface an extension for an existing protocol? Or is a new protocol to be designed?

Answer: As these research studies are early research (i.e. 6.2 money), there is no standardized interface at this time.

32. Question: Given that 3450 - 3500MHz band was auctioned in FCC Auction 110, does this mean only license holders of 3450 - 3550 MHz band may bid?

Answer: This opportunity is open to both license holders and non-license holders. Intent is to develop Novel solutions that could be utilized by license holders

33. Question: Is ASIC development expected at any point of this program?

Answer: ASIC development is not expected to be required for this project. However, if there is a Novel use case for ASICs to be used with Dynamic Spectrum Sharing systems this team would like to hear about it and see a proposal.

34. Question: Paragraph B2.1 "spectrum slices." We assume spectrum slicing to refer to RAN slicing only without CU/DU allocation. Is this your understanding also?

Answer: Spectrum slices' used in this section refers to the dynamic and time varying allocations of time/frequency/space resources, which may be portioned in a variety of ways across these multiple dimensions (time, frequency, space), in order to maximize the system performance KPI's of both wireless networks.

35. Question: Terminology such as "Federal incumbent" seems to imply that the desired system is for operation in US only. Is this an accurate interpretation?

Answer: "No, it does not limit operation of the DSM within CONUS. It is possible that if a solution is effective enough there may be interest from other nations to adapt the system. Scope of this effort is limited to US DoD systems and 5G networks."

36. Question: What is the interaction, if any, between this proposal and any vendors currently performing under the Hill Air Force Base 5G/Next-G projects?

Answer: These is no intended interact between vendors on this project and vendors on other 5G/Next-G projects.

37. Question: May resources involved in the 5G/Next-G project at Hill Air Force Base be used in this proposal or will there need to be a separation?

Answer: Proposers are allowed to propose solutions that use current DoD 5G testbeds. It should be noted that access to these testbeds is not guaranteed so it is recommended that the proposer provide a generic plan and discuss how it could fit in at a test bed like Hill AFB. Any assumptions about the state of the test bed should be listed in the proposal.

38. Question: We assume "Near Real-time" the same duration as defined in the ORAN spec for RIC and E2 version 1.0. Is this your understanding also? If no, what spec version?

Answer: Refer to the latest ORAN Alliance documents on the definition of 'near real-time'. Currently this is on the order of 10mS and higher.

39. Question: Please define "coprimary Federal/non-Federal systems from Spectrum perspective." What is meant by co-primary" and what is meant by "operational tempo?"

Answer: Co-primary is used in the same way it is used by FCC Part 2 rules. Operational tempo simply refers to the rate of operation of the DoD systems - for example with airborne radar the rate at which the RF environment changes resulting from a DoD based upon the expected motion of a DoD aircraft.

40. Question: You mentioned US-based respondents only. Does this apply to subcontractors as well -- even if they are doing non-ITAR work with one-way information flow?

Answer: Foreign companies may participate as teaming partners/sub-performers. Disclosure of CUI to foreign partners must comply with DoDI 5200.48 section 3.9 which in turn requires compliance with DoDD 5230.20 and DoDIs 8500.01 and 5200.02.

41. Question: Does the requirement to vacate the band within 5 seconds allow for some amount of continued operating in a band or sub band (i.e., isolation by beam management)?

Answer: The 5 second channel evacuation time test case is limited to non EW environment per the RFS. The purpose of this is only to compare to CBRS Winforum requirement of 240 seconds. Operation within congested/contested EW environment is a higher priority, and in this environment the 5s channel evacuation is not tested.

42. Question: What is a use case scenario (red and yellow links in TACNET and commercial spectrum in NG-RAN shown in Figure 1) resolved using bi-directional sharing?

Answer: This is an implementation specific question, and we advise to refer to the primary focus points in the RFS.

43. Question: Can the comment on the expectation/interaction with TACNET that was shown in the slides?

Answer: The pictorial in the slides and RFS are samples only and do not represent all possible use cases. Consider the coexistence of any 5G system and DoD system, including all possibilities of geographic region, incumbent/non-incumbent, and DoD/commercial systems.

44. Question: Will proposers or awardees be given technical info related to the DoD emitters in the subject band?

Answer: "No DoD incumbents will be provided and no technical information on the incumbents will be provided. Intent of the project is to propose a new set of standards that would apply to the DoD incumbents and to the network. Intent is to capture standards that would account for the different types of incumbents, radios, radars, EW systems, etc, that may be seen in the band of interest. There is no intent for the proposed solution to integrate into a currently fielded DoD system."

45. Question: How are we to interpret the 3.7-4.2 GHz bands and 4.2-4.4 GHz bands, if only the 3.1-3.55 GHz band is band of interest?

Answer: The 3.7-4.2GHz reference is to the sensitivity of interference from the 5G towards the 'Radio Altimeter' systems used on commercial aircraft. The concern is from spurious out of band emissions from the 5G systems. Please refer to recommendation ITU-R M.2059 for details on radio altimeter systems.

46. Question: Are there additional resources/templates for pricing submittal material?

Answer: For additional resources and templates regarding pricing material, please email s2marts@nstxl.org.

47. Question: Like CBRS's PAL, GAA, would this spectrum also be divided into different use cases? Would there is licensing of this spectrum awarded to few commercial users?

Answer: "It is left to the proposers to decide if the spectrum needs to be split. The intent of this program is to enable spectrum sharing co-band and not simply request that one group relocates. Understanding that relocation might be a good option for some systems it is an allowable option. We are not offering licensing to awardees. Any awardees would need to apply and get spectrum clearance to operate in these bands."

48. Question: What level of resource granularity should be addressed? Entire band of interest, individual 5G Resource Blocks, or something in between?

Answer: Please refer to the RFS and Project Talx, in which it was highlighted that all possibilities exist between control at the resource block scheduling level (highest granularity), movement of sub-bands, and movement in the entire channel (i.e. 5G channel), and similar on the DoD side.

49. Question: What if there is a unique LPI/LPD set of capabilities for EW? are there options for experimentation funding on that more challenging issue vs. just domestic?

Answer: Proposals may include elements that support LPI/LPD concepts, however the primary focus of this RFS is on spectrum sharing and this must be the primary focus of each proposal.

50. Question: How many participants can be selected max. for this proposal work? 2 or 3 or more to share this 15M?

Answer: The $15 million is in total. If the USG awards multiple teams, they will share the total $15 million.

51. Question: If have DoD end users attempting to solve and experiment in pack/go portable and moveable spectrum options, is OSD interested in this effort? Or out of scope?

Answer: This is an implementation specific question, and we advise to refer to the primary focus points in the RFS.

52. Question: Is there expected protection level in dBm or dBW at a particular location/range that needs to be provided to the incumbent systems?

Answer: The systems requirements in the RFS are written such that it is desirable that the overall performance of both the 5G and DoD systems are maximized in co-existence scenarios. This eliminates the need for highly specific protection level requirements such as in dB or similar because highest RF performance (see RFS section 3.2 on system performance) is the end goal.

53. Question: During Ph 1, will USG share radar information for the performers?

Answer: "No DoD incumbents will be provided and no technical information on the incumbents will be provided. Intent of the project is to propose a new set of standards that would apply to the DoD incumbents and to the network. Intent is to capture standards that would account for the different types of incumbents, radios, radars, EW systems, etc, that may be seen in the band of interest. There is no intent for the proposed solution to integrate into a currently fielded DoD system. It is advised that you look at ITU as a source of documentation related to radar technologies if that isn't part of your company's expertise."