SBIR 23.2 Q&A Telecon Transcript
SOCOM232-D004: Digital Augmentation for Analog Systems
26 April 2023

SBIR Process Timeline

19 April 2023: Topics issued for pre-release
17 May 2023: USSOCOM begins accepting proposals via DSIP
31 May 2023: DSIP Topics Q&A closes to new questions at 12:00 PM ET
14 June 2023: Deadline for receipt of proposals no later than 12:00 PM ET

1. **Could the solution be installed on the reticle at the first or second focal plane? This would require some simple, temporary disassembly of the scope**
   Currently, we are not looking at solutions that would integrate into the scope. The scopes are currently fielded. We have tested them extensively for weapon shock and environmentals, and we do not want to potentially degrade the scope with any additional technology inside of it. In addition, the user is always going to be paying that size, weight, power penalty, whereas we're looking for a device that would allow the user if they want to, or if they have a requirement to, be able to attach this device as needed. So, short answer is no, we are truly looking at an external device.
2. **Are there size/weight/power limitations?**
   So, looking at our statement of objectives (SOO), there is **no specific size limitation** other than as stated, it can't interfere with operation of the day scope itself. **Weight** – the SOO says – weight with attachment/mounts (however it attaches to the scope) shall not be greater than seven ounces. Obviously lighter is always better. But that does give you some room to work there. **Power** - It does say powered on one L-91)that's a lithium AA) or CR-123 battery. It also says, it shall have the ability to be powered from the LA-24 data port. So, the Precision Aiming Laser (PAL), the port that you would be plugging into to communicate with the laser does also output 3.3 volts on one of the pins. There are some current (amperage) limitations coming from that. I unfortunately don't have that off the top of my head. But if your system is low enough power, you could pull power from the laser, that way you wouldn't have to have a separate external battery.
3. **Do you have a preference on power source or battery size?**
   It needs to be able to run on a lithium AA (L-91), or CR-123. But ideally, it'd be awesome if it was low enough power to pull from that LA-24 precision aiming laser data port on the power line.
4. **Do you envision this as a transparent direct view display inline with the optical path or as a heads up type projection?**
   I'm not 100% sure if I'm tracking what you mean by "heads up type projection." So what I will say is what we envisioned was this would be displayed in line with the current optical path of the scope itself. So, some sort of transparent see-through display. The SOO lays it out: "shall display range, ballistic data to the operator's shooting eye" – so whichever eye that they're using to look through the day optic while they're looking

through the scope eye piece. So, we're just looking for something that doesn't require the user to refocus their eye or change where they're looking to see the ballistics data.

5. **Do you have a minimum acceptable eye relief distance that must be maintained?**
That's not called out specifically in the statement of objective, so I think the answer is yes. The scope itself has an eye relief in that eye box, or that acceptable place for your pupil to be – somewhat dependent on power, (magnification/how far you've got your scope zoomed in). So when you're really far zoomed in, you've really only got a very narrow band where your eye can be, or a very, very small tolerance in order to get full field of view through that scope. So whatever the user needs to be able to have full field of view of the scope and the display or displayed information needs to be in focus and clear kind of at that same point, right? So the user doesn't need to move his head forward or backwards in in relation to the scope in order to alternatively, you know, get full field of view of the scope or read text.
Eye Relief numbers for scopes:
    - SU-295 (5-25 Nightforce ATACR) is 3.4 inches of eye relief
    - SU-296 (7-35 Nightforce ATACR) is 3.4 inches of eye relief
    - SU-303 (4-25 Nightforce ATACR) is 3.4 inches of eye relief

    That being said, realistically, we wouldn't want this device to extend past the back of the eyepiece any more than about an inch to avoid hitting the operator's in the face under recoil.

6. **Should the D2P2 proposal also include a feasibility study that would otherwise have been done in the phase I SBIR**
SBIR Program Office: The requirement by law for any direct to Phase II is to have the feasibility study included as a proposal. If you do not include the feasibility study, the proposal will be considered non-responsive. It will not be even technically evaluated, because we assume that, by going directly to Phase II, that the feasibility study part has been done accordance with the SBIR/STTR Policy Directive. Please make sure you include those feasibility studies. We lose a small percentage of small businesses that have put in the hard work into a proposal because they did not submit the feasibility study. Please, please, please evaluate the instructions, the SOCOM instructions, which is located in the topic description itself. So if you go to the DSIP tool (https://www.dodsbirsttr.mil), go to the topic description for this for this Direct to Phase II, you will see a link for instructions (www.defensesbirsttr.mil).

7. **Is there a maximum length for the entire assembly? In other words, how far behind the eyepiece of the scope can the shooter's eye reasonably be positioned**
So that actually kind of ties back into that eye relief question (#5). And like, I said, there is a little bit different for each of the scopes of the 4-20 power, 5-25, and the 7-35. I would look at the eye relief provided by Nightforce for each of those scopes, and that will give you an idea of how far the user has between their face and the eyepiece. Realistically, though it should be as thin as possible, because you also have recoil that

you need to contend with, so you don't want this thing coming back and smacking the user in the face - so as effectively as thin as possible.

8. **Is there a format for feasibility study?**
   SBIR Program Office: There is not a format for the feasibility study. We left it open to give you the opportunity to write down how you did your research, how you did your study and reporting it. I don't think there's even a template on www.defensesbirsttr.mil. That website usually has some templates in there for proposal requirements. But I think it's just maybe up to you to provide us what you have. There is no limit for pages on this one. So, if you provide a page or if you provide a hundred pages, all of that will be part of the evaluation of the proposals. Obviously it's not evaluated by how much you have or how little you have, but it has to be relevant to the prototype that we're trying to achieve.
9. **Is it mandatory that the display be placed behind the scope eyepiece, or could it be placed in front of the objective?**
   It does need to go behind the scope eyepiece. That's how the statement of objectives is written. In order to really not obscure any of the light coming in through the front. It'd be quite a challenge to try to do that, especially at the wide range of magnifications that these scopes would have. Additionally, in order to provide readable information at all magnification levels, it needs to be behind the eyepiece, rather than in front of the objective.
10. **Does this device has to fit with all the scopes models listed?**
    Yes. So the SU-303, which is the Nightforce ATACR 4-20, the SU-295, which is the Nightforce ATACR 5-25 power, and then the SU-296, which is the Nightforce ATACR 7-35 power. Those are our required optics. Our snipers use all of those depending on exactly what gun it's going on, and in what situation they're using them in. They are all very, very similar. I'll say the 7-35 power definitely does have a longer eyepiece, something to be cognizant of but yes, the answer is this device does need to work with all three of those scopes.
11. **What are Lighting conditions to consider and color requirements for phase II (vs dual use/ phase III)**
    So right now, lighting conditions are going to be everything from bright daylight down to dim. Once it gets too dark, users are going to put some sort of clip on night vision or thermal device in front of the scope, and then you're back to you know, brighter image coming through the through the scope. So that is a really good point. This does need the ability to dim, have some ability for the user to control the light level on it, so that in dimmer conditions, (before it's dark enough to put on a night vision device in front of the scope), the operator can dim down the display of information. So that it's not washing out or just blasting him in the eye when he's trying to look at a dimmer scene, or if he's looking into a dark room or through a window, or something like that. So, definitely the ability for the user to adjust that brightness would be important. And then, regarding color, I don't think we necessarily need the ability to have more than one color displayed. I think monochrome would be suitable for this application, since it is just, at least in this iteration, text or other very simple information. So full color is definitely not a requirement at the moment.

12. **What is the required temperature operation range?**
    It doesn't look like we called it out specifically. For Operational Temperatures, usually we call out +49 degrees Celsius as our high operating temperature, and then -20 degrees Celsius as our low operating temperature. We realize that at those low temperatures you are going to lose some battery life, but that's usually the range of temperatures that we're looking at being able to utilize this item for.
13. **what is the pixel per inch requirement?**
    We did not specifically call this out, it's obviously a trade-off. Really, we just want the user to be able to clearly make out the information that's being displayed. So once again, text or very simple symbols is what we'd be looking for. So whatever your company feels that needs to be.
14. **Is Bluetooth communication OK between the device and the smartphone used for display customization? Or is USB required?**
    So certainly wired connection is required between the LA-24 (Precision Aiming Laser) and the device. As far as the ability to customize the type, size, and position of the data, we did not specifically call that out. I think ideally, we could get both. But if that makes the package too large, then that's something to consider as well. If it is Bluetooth only, there would need to be a switch that would totally kill that bluetooth transmission entirely. If there is no way to control that otherwise it would need a switch to cut the Bluetooth connection.
    SBIR Program Office: Just to add on to this, and I've seen this in prior SBIRs as well, and in my prior work, but when it comes to Bluetooth and wireless communication altogether, it's good to have that as kind of an additional capability in your proposal, but think about the mission itself, and the restrictions or the constraints that we may have as the operator. So, try to lock things up from the cybersecurity perspective. Bluetooth may not have the right comms security. So, whether it's Bluetooth or something else, you can provide these and say, here's what else we can do. But I think the hardwired option is still something that, until cybersecurity says otherwise, we can completely secure.
15. **Will SOCOM provide a test bench for testing and validation?**
    Before going to any sort of Phase III or productions, we certainly would be doing developmental testing. And getting operator feedback on it. We would not necessarily provide a weapon as GFE. The SOO does call out that upon request we could provide the three scopes that were called out in the specification (SU-295, SU-296, SU-303). Those could be provided as government furnished equipment to whoever was awarded the Phase II SBIR.
16. **Will operator feedback be available throughout phase II? Or only after**
    Definitely available throughout the Phase II. Whichever company is awarded the effort. That's something that we do a lot with our SBIRs that we've done in the past - we've got a really good team of combat developers. And if we need additional feedback beyond that, they've got connections where we can get more users behind it. Yes, user feedback will absolutely be available throughout the Phase II SBIR.
17. **what is the range of display focus distance SOCOM expects**
    The display focus should be able to be adjusted to whatever the rifle scope reticle focus

is. So I believe on the rifle scopes, it's usually plus or minus two diopter. Now that is kind of on the extreme end of things. Most users are much closer to zero diopter than that. But ideally, it would have that ability to be plus or minus two diopter.

18. **Do you expect to award multiple contracts for Phase 2?**
    So that is depending on the proposals that will receive. If we receive multiple proposals that hit on the needs and we have the ability to contract it, pending approval from my KO, then we will do so. So that is really up to you guys providing some solid proposals to meet our requirements. And then we kind of make that decision from that point. Just focus on getting us the good proposals.
19. **Is it OK to mount the display via the scope body tube or ring mount (non rotating components)? Or must the device mount on and rotate with the eyepiece?**
    It would be acceptable to mount to the non-rotating portions as long as the user was so able to rotate the eyepiece as they change the magnification of the scope, it would be acceptable to mount on the non-rotating surfaces.
    The intent is for this device to be non-interfering with the user so, however, it mounts ideally it doesn't interfere with their normal adjustments they would make on the scope.
    On all three of those Nightforce scopes, the ATACR series, the entire eyepiece rotates for magnification up and down the magnification of that scope.
20. **Could you provide detail information about the scopes listed for applicants?**
    It is the Nightforce ATACR series. There are 4-25 power, 5-25 power, and then 7-35 power. If you look that up online ATACR 5-25, that should pull up the Nightforce product page for it, and should pretty well give you all the information you need. Ours specifically have a Tremor III reticle in them, but beyond that, that's really all the external differences you might have.