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Individuals **outside your company**, including the companies listed above and other third parties, potentially including your competitors and others in your industry, may receive and/or review award submissions. All information submitted should address the program's management, leadership, and processes in a manner that you are comfortable sharing with third parties freely and without restriction, and may not include any classified or proprietary information or materials. Do not include any materials marked Confidential or Proprietary or bearing any similar legend. All responses and other submissions, whether in whole or in part ("Submissions"), shall be deemed not to be confidential, proprietary, and/or nonpublic information of any sort for any purpose.

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Thank you for participating,

Gregory Hamilton
President
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Acknowledged, agreed, and submitted by

Nominee's Signature

05/24/2022
Date

Nominee's Name (please print): Ranji Issac
Title (please print): Sr. Program Manager
Company (please print): Collins Aerospace

NOMINATION FORM

Name of Program: Software Programable Open Mission Systems Compliant (SPOC) Radio
Name of Program Leader: Ranji Issac

Phone Number: (214) 683-3622

Email: Ranji.issac@collins.com

Postal Address: 1613 Huntington Dr. Mesquite, TX 75149

☒ Customer Approved

- Date: 05/23/2022
- Customer Contact (name/title/organization/phone): Gavin O'Neil/ SPOC PM/HNA/(505) 769 - 0237

☐ Supplier Approved (if named in this nomination form)

- Date: N/A
- Supplier Contact (name/title/organization/phone): N/A

PLEASE REFER TO PROGRAM EXCELLENCE DIRECTIONS
AS YOU COMPLETE THIS FORM.

EXECUTIVE SUMMARY: Make the Case for Excellence *(Value: 10 pts)*

What is the vision for this program/project? What unique characteristics and properties qualify this program for consideration? (12 pt. Times New Roman) LIMIT YOUR NARRATIVE TO THIS PAGE.

Collins Aerospace was awarded the Software Programmable Open Mission Systems (OMS) Compliant (SPOC) contract by the US Air Force (USAF) Air Force Life Cycle Management Center Aerial Networks Division (AFLCMC/HNA) Hanscom in October of 2019. The scope of this contract was to develop a proof-of-concept prototype of a multi-function processor designed to a new industry & government developed standard that could host three separate waveforms simultaneously while supporting the ability to swap in another programmable fourth waveform. Both the Collins and USAF teams worked together to understand the expectations of the technology while collaborating on the vision, working around the challenges, and establishing future relationships.

Since contract inception, both the AFLCMC/HNA SPOC team and Collins focused on building and demonstrating a fully capable prototype. We collectively had a vision for the SPOC technology to be the future of OMS multi-waveform radios for meeting the size, weight, and power (SWaP) constrained, real-time software programable, dynamic needs of the warfighter. Collins has taken steps toward achieving this vision by hosting two successful demonstration events with the AFLCMC/HNA team. The first event demonstrated cabled RF functionality of the SPOC technology in a lab environment, where the Collins team showcased the system's ability to simultaneously run 3 waveforms, program in a 4th, and translate data between different waveform combinations. The second demonstration was just as exciting when the team demonstrated the prototype sending messages and video over the air on select waveforms. This over-the-air demonstration brought excitement to both the Collins and AFLCMC/HNA SPOC teams as the radio system's potential became more attainable.

Engineering the prototypes and preparing for the demonstrations were not easy tasks. The contract period overlapped with a global pandemic causing supply chain issues and an entire work environment shift, followed by 100+ mph hurricane winds in August 2020 that caused the entire city of Cedar Rapids, Iowa to shutdown for approximately two weeks. Strategic execution steps were taken to help bring programmatic impacts caused by these unforeseen events to a minimum. One action was to use collaborative tools to help keep workflow efficiency while much of the team worked remotely. Another action taken was Collins' use of COTS hardware which utilized the 3U-OpenVPX solution to minimize hardware development and accelerate software development, which led to the cost effective open standard multi-function processor (MFP) the team uses today. The team overcame many obstacles to keep their focus and drive to meet every program expectation.

The opportunity to work with the AFLCMC/HNA SPOC team to provide such capability was strengthened by our relationship built around trust and communication. Throughout the design, development and demonstration of SPOC, the team prioritized visibility with the customer on expectations, issues, and workarounds to keep moving forward. Bi-weekly technical meetings and quarterly Agile program planning events allowed the team and customer to ask questions and share ideas for growth around the technology. With the many reviews and cadences, the relationship became stronger, and trust was established leading to a cohesive working group of aligned goals.

Collins continues to build onto this relationship with the AFLCMC/HNA Hanscom customer while working on the next iteration of the SPOC technology. We take great pride in all we are doing to achieve the vision as both teams lean forward on taking SPOC to new horizons.

Do not exceed 10 pages in responding to the following four descriptions; allocate these 10 pages as you deem appropriate, but it is important that you respond to all four sections. DO NOT REMOVE THE GUIDANCE PROVIDED FOR EACH SECTION.

VALUE CREATION *(*Value: 15 pts*)*
Please respond to the following prompt:

- Clearly define the value of this program/project for the corporation
- Clearly define the value of this program/project to your customer
- Clearly define the value of this program/project to members of your team
- Clearly define the contribution of this program/project to the greater good (society, security, etc.)

(12 pt. Times Roman)

THE VALUE OF SPOC TO COLLINS AEROSPACE

The SPOC program was scoped to prove that industry could develop a technical demonstrator of relevant DoD capabilities compliant with newly released OMS/OCS standards aimed at improving the adaptability and affordability of solutions for the warfighter. OMS and OCS standards have been a large factor in many requirements seen for future communication system technology expectations within the military mission systems space looking for open systems to bring advanced capabilities that will allow the military to pace the threat in an evolving world. With our partnership with AFLCMC/HNA, the SPOC program has given Collins a launch platform for future open systems work and provides a proof of concept to eventually lead to a multi-waveform OMS compliant product solution to real-world military problems. The future of an open systems multi-waveform radio that improves flexibility, scalability, and ease of integration over federated systems helps Collins meet the needs of the customer.

The SPOC program has also increased our experience with the OMS and OCS standards development and reinforced our leadership participation in open standards committees. This is a large value creator for the Collins team as our work implementing real capabilities to these standards helps shape and improve the standards and prepares us to offer customer-relevant solutions in RFIs and RFPs. The alignment with the market movement and needs provides significant opportunity for Collins to continue to be an industry leader for military systems.

THE VALUE OF SPOC TO THE CUSTOMER

Collins puts great focus on solving customer problems. The need for open architecture and systems has been a common theme across the government's future platform expectations for reducing vendor lock and accelerating deployment of updates to the warfighter. Using the SPOC technology, Collins brings forward an OMS compliant, 3U-VPX chassis, multi-waveform capable system which improves scalability and flexibility while reducing integration time. The SPOC technology offers a solution to a growing need, voiced by multiple customers, allowing for the war fighter to pace the threats of the future.

The AFLCMC/HNA Hanscom team awarded the SPOC contract with the hopes of eventually developing a flyable demonstrator to market to other interested platforms. Collins shares that interest and contributes to it by conducting multiple demonstrations to various military entities and improving the SPOC exposure while also continuously developing it to higher technology readiness levels (TRL). With the need for multi-domain solutions across a connected battlespace, the SPOC program

provides an avenue to achieving a more connected network allowing quicker data transfer and messaging while supporting a SWaP considered design.

The SPOC program also adds value to current and future customers by allowing for early feedback and updates to the standards body based on lessons learned through the program. Groups interested in implementing open standards requirements can adjust for future program endeavors around open systems needs.

THE VALUE OF SPOC TO THE MEMBERS OF THE TEAM

While the SPOC program highlights many functions and advantages to both corporation and customer, the team who put it all together takes pride in the ability to work on a program that was one of the first in industry to demonstrate the SPOC capabilities with an OMS/OCS architecture. We have voiced this program as the "next big thing" in the world of military radio capabilities and open systems, which brings its own feeling of excitement. This program provided an opportunity to work on technology that packaged capabilities seen on several different radios into one chassis, while still achieving interoperability with legacy systems. Within the program, the team was able to build experience performing in a more agile work environment; that highlighted a collaborative framework around continuous visibility with the customer and Collins leaders. Testimonial to the value of visibility and experience gained from the SPOC program, we have had multiple team members join and springboard to more advanced roles that leverage the experiences gained from the SPOC development.

THE VALUE OF SPOC TO THE GREATER GOOD

Through our work in the defense industry, we find it empowering that Collins products supports the greater good of protecting our country and our allies. The US Air Force (USAF) brings attention to the needs which apply to areas of improving national security, increasing mission success rates, and supporting opportunities for soldiers to return home. The SPOC program is building an open system architecture for future communication systems. In partnership with the USAF, Collins is developing a system that will enable future warfighters to have improved communications in the Joint All Domain Command and Control (JADC2) concept of operations. The JADC2 concept, as shown in **Figure 1**, is to improve communications and data transfer through the multiple domains in the battlespace. This is meant to connect disparate networks, improve communications, and enable decision makers to act faster. In providing this SPOC technology to the Department of Defense, we'll help provide an improvement in the warfighter decision timelines at both the tactical and operational levels. SPOC will meet this goal by providing multiple – reprogrammable channels that provide increased utility in an everchanging threat environment. We see that SPOC technology will fit into a larger framework within the country's military networks through JADC2 and other connectivity plans.

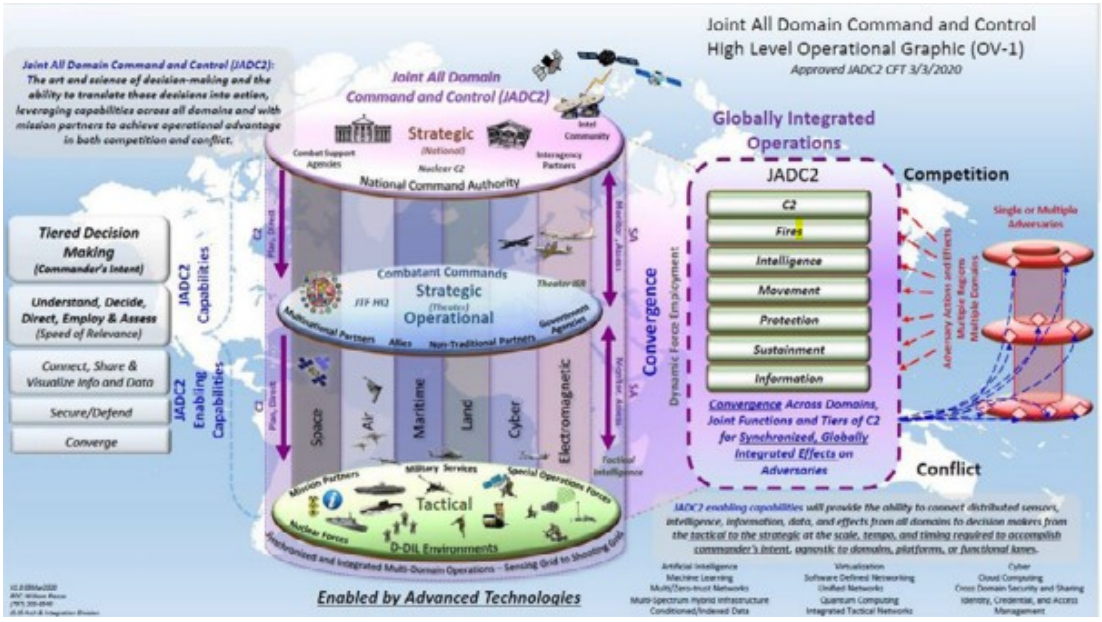

Figure 1*: JADC2 OV-1*

The ability for US military and civilian decision makers to act upon tactical and operational data faster than our adversaries will enable an advantage in the battlespace. Programs like SPOC will help the Department of Defense keep decision makers informed that will allow them to make those timely and accurate decisions to enable tactical advantage and protect US service members.

METRICS (Value: 15 pts)

Please respond to the following prompt:

- What are your predictive metrics?
- How did you perform against these metrics?
- How do your predictive metrics drive action toward program excellence? Please provide examples.

(12 pt. Times Roman)

OUR PREDICTIVE METRICS

The SPOC program has utilized numerous metrics to support the success of the program execution. Tools and reviews played a large role in program accountability and visibility, while taking a close look at program progress. The program leaders held monthly Program Management Reviews (PMRs), where a snapshot of the key elements of the program's prior month efforts was presented and reviewed. The PMRs covered each month's milestones, staffing, program cost and schedule. The reviews were held with the business leadership and program team. The metrics presented at the reviews show where the cost and schedule performance indexes. Using the CPI and SPI metrics and trend data, the team was able to analyze risk of cost overrun or schedule impacts. Using these metrics and reviews, we examined future planned work, where cost and schedule drivers were addressed with actions to help support program success. Every quarter the PMRs included our comprehensive Estimate at Completion (EAC) reviews, during which we reviewed the financial snapshot of the program where sales, gross margin, management reserve and any future risk impact to the program can be addressed. If there are variances to the planned effort, the drivers for each variance were understood and actions were taken to address them.

Leading up to the PMRs, the team was responsible for monthly updates for tracking risk, budgeting activity, and assessing the estimate to complete (ETC) planned for the remainder of the work to be completed. The Collins JROM tool in Jira helped us manage the risk and opportunities identified through the program execution phase. The team held frequent meetings to address the risks that effected the program and applied mitigation actions to either reduce or totally avoid the impact. **Figure 2** depicts the color impact chart which helps the team visualize where most of risks and opportunities are from a low to high impact probability. The team uses ISAT, SAP, and Cobra, which are a mix of Collins and commercial reporting tools used to track each planned activity's budgetary estimates. Similarly, the team also tracks to each activity leader's respective activity planned into the integrated master schedule (IMS). The team held IMS reviews monthly to track to progress made per activity while addressing anything that may impact the critical path.

Figure 2: ***SPOC Risk & Opportunity Probability Impact Matrix***

These tools, along with other metrics, such as deliverable tracking, helped the team remain accountable to each task, while gaining visibility with the customer and leadership through reviews, and apply actions to continue improving on the road to program success.

HOW WE PERFORMED AGAINST THE METRICS

As the different iterations of the program ended, the team completed all deliverables and milestones within the program schedule and budget. One of the factors was the ability to track and burndown risk that was captured within the risk registered. As depicted in **Figure 3**, the team was able to diligently provide risk mitigation plans to either reduce or completely avoid areas of risk that impacted the schedule and budget for the program. As an example, early in the program, the design team realized the proposed solution for a portion of the RF front end had a parts issue, that drove a complex re-design and potential hardware lead time issues to address. This risk was actively managed, and the team evaluated a wide range of technical options that leveraged design experience from other functional areas to design and develop a quick solution that met the needs of the program and supported the planned customer demonstrations.

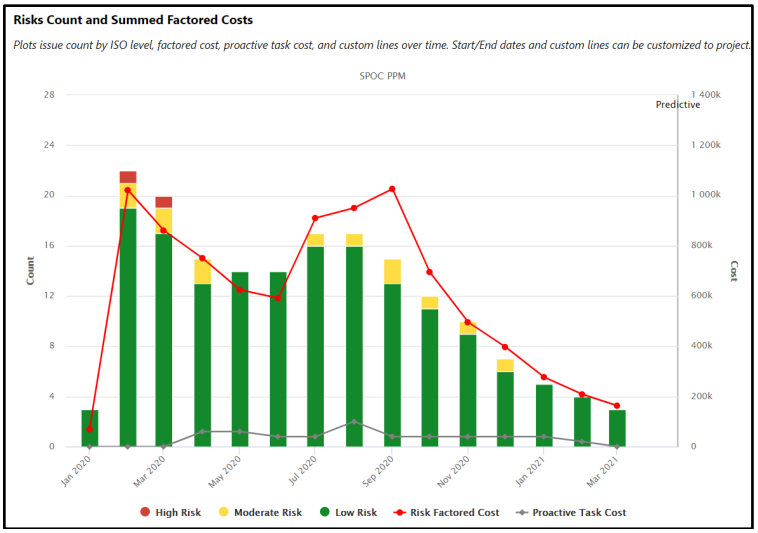

Figure 3*: SPOC Risk Burndown Chart*

Another defining indicators of our performance in the eyes of the SPOC Air Force customer is when we receive our annual contractor evaluation. The Contractor Performance Assessment Report (CPARs) is put together to address various areas of interest of the government customer for the contractors. The Collins SPOC team has received high ratings, as seen in **Figure 4** over the multiple contract performance periods on quality, program management, and schedule. The customer indicates that this is in respect to Collins' ability to execute to plan and react to change effectively in order to meet the agreed upon deliverables and perform to the contracted budget and schedule expectations.

Evaluation Areas	Past Rating	Rating
Quality:	Very Good	Exceptional
Schedule:	Very Good	Very Good
Cost Control:	N/A	N/A
Management:	Very Good	Very Good

Figure 4*: Customer CPARs excerpt of 2020 (Past Rating) & 2021*

Over the past few years on the SPOC program, Collins has exceeded expectations on addressing design reviews, program reviews, technical interchange meetings (TIMs), and executing two successful demonstration of the technology on-time and within budget. The SPOC customer shared comments with the team on how pleased they were that we were able to meet the milestone dates of the original program schedule. We continue to strive to meet and exceed customer expectations a priority on the program as we carry the SPOC technology to new heights.

HOW THE PREDICTIVE METRICS DROVE ACTIONS TOWARD PROGRAM EXCELLENCE?

The Collins' predictive metrics drove actions toward program excellence through constant checks and measures. Through continuous cadences with the internal team, program leadership, and customer, we were able to address areas of concern quickly and react with actions taken to mitigate risk to the program milestones.

An example of this is when the team had to work various tasks leading up to the second SPOC demonstration event. The team had planned to have multiple SPOC MFP units available to have parallel testing and dry runs; however, the team identified that several units had minor issues that put a strain on the critical path. The IMS showed a potential day-for-day slip if things were handled

within the days of slack created prior opportunity in the schedule. The team came together and worked with program leadership to have daily cadences to find areas where MFPs could be shared while the out of service units were being troubleshot. Through this process, we put together a plan to address where unit usage was priority and reassessed the schedule daily for task workarounds that didn't impact the critical path. While the days leading up to the demonstration were stressful to the team, they were able to ensure the demonstration had sufficient, functioning assets and addressed the plan to continue to help reduce the overall risk to demo day. In the end, the team was able to complete the tasks on time to the IMS schedule and host a successful seamless demonstration with the customer.

While this risk and its respective actions were mostly only visible to the internal team, the ability to avoid it and exceed customer expectations at the demonstration event was how the program team was measured. This was a testimonial to team's ability to use all assets at their disposal, rally and bring forward a demonstration to the larger audience to which the customer deemed "an exciting job well done by a golden team".

DEALING WITH PROGRAM COMPLEXITY (VOLATILITY, UNCERTAINTY, COMPLEXITY, AMBIGUITY, OR VUCA)
*(*Value: 25 pts*)*
Please respond to the following prompts:

- *10 pts:* Describe areas of VUCA faced by your program and why.
- *15 pts:* Explain how your team responded to these challenges.

(12 pt. Times Roman)

AREAS OF VUCA FACED BY THE SPOC PROGRAM

The SPOC program kicked off in Fall 2019 and was scoped to develop the SPOC multi-function processor (MFP) prototype and then demonstrate with a multi-function aperture (MFA) in an 18-month period of performance. Despite all the planning, the world was taken over by a pandemic, which caused a ripple effect across multiple areas of industry, including supply chain. This, along with a local environmental disaster caused a shift to the originally planned program management and execution approach.

The pandemic drove many changes at the site such as social distancing policies along with moving many individuals to remote work. Initially, our IT infrastructure and teleconferencing capabilities did not fully support a mostly remote workforce. For example, the remote network virtual private network was unable to handle the number of connections and the tools to collaborate digitally. Supply chain issues due to COVID-19 were seen across multiple areas of impact to the global markets. Specifically, the slow down within the semiconductor industry affected the SPOC development phases of the program.

The derecho that swept through Iowa and surrounding states in August 2020, a completely unexpected occurrence, added to the volatility that the team had to work around in order to keep the momentum of program execution moving. During this time, Cedar Rapids was struck by a storm that brought sustained 140 miles per hour straight-line winds that lasted for over 45 minutes. This caused such widespread devastation that shut the city down for approximately 2 weeks. Cell phone and internet service were down, electricity was out in much of the city, and travel through town was heavily restricted by debris and downed power lines. Additionally, the Collins building where the

SPOC program was executed sustained damage to the roof. This was a large impact to program coordination and collaboration that put risk on schedule and execution capability.

The SPOC program was designed around the plan for an in-lab demonstration of the technology while meeting OMS/OCS requirement standards. This high-level goal was favorable in the sense that the team was allowed to make decision to help construct technical requirements that were set around promising expectations leading up to the important demonstration. However, ambiguity around the path to get to done (including development activities and test needs) to meet the program demonstration goals introduced risks. As a proof-of-concept program, there was risk the high-level technology would not meet the expectations of the statement of work (SOW).

HOW THE TEAM RESPONDED TO THESE CHALLENGES

Once the IT setup was put together, everyone had to find ways to work in the labs effectively while complying with new social distancing policies and coordinating with team members who were working remotely. The software team addressed this change by converting their existing hardware resources (development boards and product cards) into a sharable pool that could be used fully remote. The software team setup ethernet controlled power switches to remotely cycle power when necessary, and setup Raspberry Pi's to act as a hub for serial console and controlling physical discretes to the hardware. This remotely accessible, sharable hardware allowed the software team to continue development remotely without limiting their ability and became a fixture they kept using after more work and engineers returned to the office. The team collaborated through sharing of files in a change management tool, direct phone calls for discussions, and messages with pictures of hand drawn notes in lieu of white boards. While adjusting to the new work environment, the team transitioned to working heavily in the Atlassian tool suite now operating in an environment where in-person interactions were no longer a routine event. The team members had to now hold themselves accountable to coordinate and capture work through Jira, and document and work problems through Confluence. Which are both online toolsets that promotes collaborative working from any location.

As a system engineering team, we were able to not only divide the work in order to comply with COVID-19 restrictions, but also provide meaningful work for those who were alternating between working from home and at the office. For instance, the team split up into two teams, one was a systems IPTL for the main integration lab and the other was a systems lead for the second lab where we were doing a demo in for an advanced tactical waveform. By splitting up the leads, this ensured the team could successfully navigate two different integration events at the same time. Also, the team was able to utilize the information so that work can be performed away from the office. Furthermore, the team conquered the workplace change by having rotating shifts between the engineers. The systems team set up a chat with all the various disciplines of engineering for times to be in the lab and what the activity was that is being supported. The biggest thing accomplished over the last two years was to ensure that we stayed connected throughout the whole time despite being physically separated.

This storm devastated the city and left the community without power for over a week. Cell phone and internet were down and travel through town was heavily restricted by debris and downed power lines. Work was done remotely on laptops and then brought to the local network in the office when travel was possible. As cell towers came back, the remote workers began resuming work via cell phone hotspots and person to person cell calls to coordinate work. Despite the devastation the team, was able to minimize the schedule loss and keep moving the program forward despite the infrastructure disruptions.

The final deliverable for this effort was a live lab demonstration for the Air Force program office hosted at a Collins Aerospace facility. The specific test criteria and demonstration scope were left up to the Collins team to define and determine what was needed to meet the stated goals of the program office. The systems team defined this effort and was able to create a successful demonstration plan through backwards deductive reasoning. In this deductive reasoning, the team started by envisioning the end state of the demo where the customer was ecstatic, and the system had shown to them to meet all the OMS/OCS requirements and shown a capability that the Air Force did not currently possess. From there, the team asked probing questions by conducting calls to align thoughts and vision of what the Air Force customer would need to see to help meet the ask.

ORGANIZATIONAL BEST PRACTICES AND TEAM LEADERSHIP *(*Value: 35 pts*)*
Please respond to the following prompts

- *15 pts:* Describe the innovative tools and systems used by your team
- *10 pts:* Define how you developed, led and managed people
- *10 pts:* How did you leverage skills and technologies of your suppliers?

(12 t. Times Roman)

THE INNOVATIVE TOOLS AND SYSTEMS USED BY THE TEAM

Provided that the SPOC program was to develop a proof-of-concept technical demonstrator, the team had the ability to investigate different approaches to achieve this goal. Since there was room for outside-the-box thinking, while adjusting to COVID-19 work arrangements, some innovative tools and systems were used to help with collaborative and developmental workflow.

To collaborate efficiently and effectively, the team took advantage of tools such as Jira and Confluence. With these tools, the team was able to track Agile planning stories, tasks, sub-tasks, capture meeting actions and notes. Jira was useful in helping the team capture the work and the burndown of tasks across the planned sprint cycles and risks. Another benefit from these tools was the ability to assign actions that emailed work tickets to each respective member with time constraints to complete. We were also able to use tools like Subversion to help version control all program artifacts and setup a new program file structure for every new program iteration that was awarded. Using Zoom, Teams, Google hangouts, and other conference tools the team was able to run Agile program increment planning sessions, daily standup calls, and other meetings remotely. Utilizing the various collaborative tools across the program provided an almost in-person-like efficiency to the program execution.

To truly understand the customers' expectations for SPOC, there was some learning between both SPOC teams to align goals and expectations. To accomplish this, the team had communicated questions via the technical interchange meetings and reviews. The team first determined that a simulated mission using the SPOC radio that emulated a representative mission coordinated by an AWACS platform using SPOC communicating between Army, Navy, and Air Force assets utilizing the four advanced military waveforms in a way not seen with traditional radios. From there, the next round of questions led the team to develop a series of tests that showed that the waveforms all work simultaneously. From there, a test for each individual waveform was further developed to prove that each waveform interoperated with fielded military data radios to prove that what was shown in the simulated mission was real. Finally, the probing questions led to a series of tests that showed all the waveforms met the requirements of the OMS/OCS standards. In this way, a tiered set of tests were determined and logically ordered that told a convincing and compelling story from the base

requirements all the way to a compelling representative mission that convinced the Air Force that SPOC offered new capabilities they could not find elsewhere.

To go about achieving a proof of concept with somewhat high-level requirements was a development challenge. The team leveraged commercial off-the-shelf (COTS) hardware for quick acquisition and developed a software development kit (SDK) to help construct a system that met the needs of the program.

Figure 5*: Crawl, Walk, Run approach to SPOC development*

Throughout the contract period, the team, with leadership support, embraced a crawl, walk, run approach (illustrated in **Figure 5**) to integration through the different phases of development with a point to enable rapid feature additions and address risk early in the program. This effort was supported by taking advantage of development hardware like the Xilinx Zu7 Development board and the Dawn VME DEV-4200 3U OpenVPX chassis. The Xilinx Zu7 development boards enabled software and firmware to begin developing their code and VHDL on the target processor prior to the final hardware being available. This enabled the team to pull in their end date via an earlier start and to save cost. Once the circuit card assemblies were available, they were installed into the DEV-4200 chassis with a custom designed rear transition module (RTM) that enabled the team to simulate the behavior of the cards in the final hardware setup. The RTM functioned as the backplane simulant and enabled access to signals and debug ports to make sure the software and hardware behaved correctly. From here, the team was able to quickly move to the final target hardware assembly with fewer integration steps. This also enabled the team to have more development resources enabling more engineers to work simultaneously at a greatly reduced material cost.

HOW WE DEVELOPED, LED AND MANAGED PEOPLE

As leaders on the SPOC program, we find it incredibly valuable to not only make sure everyone understands the vision and how they fit into it, but to also align everyone's individual motivations to help meet the common goal. With the different levels of leadership in the program organizational structure, each leader is empowered to bring this forward to their respective teams. The technical leaders plan and address the weekly, monthly, quarterly tasking to the team members at the various status meetings and program increment sessions. Each team member is to understand their tasking towards the planned effort.

The resource managers work with program management to understand resource demand at the different phases of the program to provide the best fit talents to meet the needs of each program phase. Team leaders hold one-on-one meetings with individuals to help understand need, concerns, goals, expectations, etc. to keep the pace in achieving the program vision. The program leaders also

collectively get together to share known issues, areas for improvement, recognition, etc. to make sure the entire team is aligned to the goals and good work is appropriately reinforced.

Another aspect of team development was empowering the team to discover ways to onboard and train new members of the team while working in a COVID world. Early in the program, a new graduate joined the systems team as a new engineer and had to be trained remotely. No training plan or example existed for how to onboard a new engineer into our program or team purely remote, so the system team had to invent a new way. The team started performing "buddy engineering" with the new hire and would do a shared screen and telecon with a senior engineer and the new engineer to teach them the technology and how we worked as a team. This was especially useful as it allowed the new engineer to ask lots of questions and get guidance and understanding from the more experienced employees. The new hire then was assigned some work to own and would do daily screen shares and calls with the systems lead engineer to answer any questions and make sure they were on the right path.

The team, collectively, works to keep each other accountable when driving to meet program milestones. This applies a "one vision, one team" mantra to the dynamic of the program. From an individual basis, we have seen team members grow into developed contributors within her/his respective roles spring boarding them into higher achievement and advancements within the company, such as Engineer of the Year finalist, technical leaders, and managers.

HOW WE LEVERAGED SKILLS AND TECHNOLOGIES OF OUR SUPPLIERS

Supply chain issues were seen across multiple areas of impact to the global markets, specifically the slow down within the semiconductor industry affected the SPOC development phases of the program. Although the impact was global, it was important to opportunities to de-risk anywhere in the program to help meet the planned milestones and scope. The team was able to work around supply chain impacts by identifying long lead parts and modifying our standard process to procure parts earlier in the process. For instance, the team identified non-standard board material needed for a rear transition module that was predicted to be in short international supply. 3 board houses said they did not have stock and lead time would be 4-6 weeks from order placement. The team proactively worked with a board house as soon as the board stack up was defined but before the design was released to pre-order some material. This made sure it was in stock when the board was released, and the order was formally placed. By keeping constant communication and working with the supplier to help provide a win-win scenario, the team was able to bring in the schedule by 4 weeks to help mitigate the impact caused by unforeseen circumstances.