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Thank you for participating,

Gregory Hamilton
President
Aviation Week Network

Acknowledged, agreed, and submitted by
Justin Murgia

5 June 2023

Nominee’s Signature

Date

Nominee’s Name (please print): Justin Murgia _____

Title (please print): Sr. Program Manager _____

Company (please print): Collins Aerospace _____

NOMINATION FORM

Name of Program: E-2D Distributed Readiness Trainer _____

Name of Program Leader: Justin Murgia _____

Phone Number: 571.563.5866 _____

Email: justin.murgia@collins.com _____

Postal Address: 22640 Davis Drive, Sterling, VA 20164 _____

Customer Approved

- Date: May 20, 2023 _____
- Customer Contact (name/title/organization/phone): RA Raoul / E-2 Training Systems Manager / NAWCTSD / 512.312.6292 _____

Supplier Approved (if named in this nomination form)

- Date: May 31, 2023 _____
- Supplier Contact (name/title/organization/phone): Darrell Perry / PM / NGC / 321.361.2175 _____

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

EXECUTIVE SUMMARY: Make the Case for Excellence

Value: 10 points

Use 12 pt. Times Roman typeface.

What is the vision for this program/project? What unique characteristics and properties qualify this program for consideration?

The E-2D Advanced Hawkeye is the most advanced capable airborne command and control platform the world has ever seen. With the state-of-the-art APY-9 radar and advanced C4ISR systems, the E-2D Hawkeye is a two-generation leap in technology over the E-2C Hawkeye.

This technology and advanced mission sets demand that the E-2D aircrew receive the proper training to meet the high-end threat and be prepared to “fight-tonight.” The Collins Aerospace team has been the Naval Air Warfare Center – Training Systems Division (NAWCTSD) trusted partner in E-2D training systems since the first E-2D Hawkeye Integrated Training System (HITS) contract in 2008. The Collins Aerospace team has fielded a total of four (4) Weapon System Trainers in the E-2 fleet concentration areas at Naval Air Station Ventura County at Point Mugu, California and Naval Station Norfolk, Virginia.

Concurrency and Speed to Fleet. During aircraft upgrades, a key goal is to provide training device updates concurrently with new software and hardware releases to ensure tactics and capabilities are up-to-date and as advanced as possible. However, this goal is often unachievable for many reasons. One is due to having Aircraft Common Equipment (ACE). While this provides a "full fidelity" hardware solution, it also creates great difficulty for software developers to create an updated simulation environment. Furthermore, Operation Flight Programs (OFP) are recurring and necessary, so software upgrades are common but typically do not prioritize inclusion of the simulation software update to minimize schedule impacts. As a result, the simulation and training capability can lag by years.

The E-2 is constantly going through OFP updates to introduce and field new system capabilities which can completely change how the mission is tactically driven. These emerging capabilities cannot be trained fully in a live environment for various reasons. A critical need was identified to train E-2 aircrews properly and effectively in order to execute these missions and be ready to “fight-tonight”.



The E-2 training team at Collins Aerospace answered this challenge with the development of the E-2D Distributed Readiness Trainer (D-DRT) which removed all ACE components while still creating a full-fidelity simulation environment using the actual aircraft OFP. This also presented a smaller footprint solution, allowing the delivery and fielding to the Marine Corp Air Station (MCAS) in Iwukuni, Japan for the forward deployed E-2 Squadron.

Our software team switched to a true AGILE software development process allowing iterative software releases and kept pace with aircraft upgrades. This was very successful and actually enabled first deliveries to the fleet 5 months ahead of schedule, and to this day, all six (6) fielded D-DRTs are concurrent with the fleet.

“Bottom line, it is the right training aid for E-2D warfighters to become highly proficient in the skills that are necessary for us to have to win in the high-end fight, in a complementary role with our other training devices.” - Captain Chris “Mullett” Hulitt, E-2 Community Commodore

DIRECTIONS

- **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.
- Use 12 pt. Times Roman typeface throughout.
- Include graphics and photos if appropriate; do not change margins.

VALUE CREATION

Value: 15 points

Please respond to the following prompt:

- **Clearly define the value of this program/project for the corporation; quantify appropriately**

Building Trust. The E-2D D-DRT provided value to Collins Aerospace as another opportunity for the Collins team to earn customer *trust*. This means something to our customer, to the fleet end-user community, and to our team members here at Collins. Meeting and exceeding schedule expectations and delivering needed capabilities to the fleet all over the world, in any environment, builds upon that trust. The teamwork between the NAWCTSD and the Collins team during times of adversity built a trust-based relationship and made the work rewarding and fulfilling to NAWCTSD and Collins Aerospace. In this case, there existed a true need to get this training capability out to the forward deployed squadron in Iwakuni as soon as possible. Our team persisted through severe global travel restrictions and supply chain delays to answer this call.

Fulfilling Work. Our team's desire to build and maintain this trust during some of the most difficult times had an infectious attitude that increased the whole team's commitment to excellence and made the work fulfilling for all. Our group felt committed to the common goal: to get this capability out to the warfighter. There were challenges throughout this program and yet we persevered together as a group, and elevated the team purpose, creating excitement and commitment throughout all aspects of employment. This program became a real mission for the team.

- **Clearly define the value of this program/project to your customer**

"These devices prove that with exceptional government-industry cooperation, coordination and communication, these types of efforts can be accomplished in a fraction of normal acquisition time from contract award to delivery," - David Adams, E-2/C-2 Training Systems Integrated Product Team Lead with the E-2/C-2 Airborne Command and Control Systems Program Office (PMA-231)

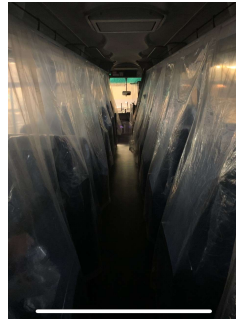
Readiness. The D-DRT team strove to exceed expectations from the onset of this program. There was an identified need for the E-2 community to train to advanced missions, and train often to keep highly tuned skillsets from atrophying. The pace of training created an additional time constraint on the team because in parallel, the training capability itself was being implemented at all E-2D locations, including with the forward deployed squadron at Marine Corp Air Station (MCAS) Iwakuni, JP. Working closely with NAWCTSD, the conceptual vision, rapid prototype demonstration, and ultimately contract award for production D-DRTs to all 3 E-2D sites was accomplished in under 9 months.

Commitment and Schedule. The entire industry was affected by the COVID-19 Pandemic and this program's first delivery was to the forward deployed squadron at MCAS Iwakuni. Travel was severely

restricted during the first two years and our team worked tirelessly with NAWCTSD and MCAS Iwakuni representatives to develop a plan to get material and personnel onsite to install and test these devices, so they were ready to go when the squadron returned from deployment. At no point was there a course of action to simply push schedule and not go. The entire team involved was dedicated, through abnormal travel routes including, various quarantine stops and even having to take what was coined “the bubble bus” non-stop for 13 hours from the immediate point of entry in Toyko, JP straight to MCAS Iwakuni.

➤ **Clearly define the value of this program/project to members of your team; quantify if possible**

Ownership. The Collins team that supported this program was small compared to other programs in the portfolio and relatively inexperienced, starting out with only a quarter of the personnel of other E-2 programs at the time. The Program Manager, Project Engineer, Hardware Lead, and Software Lead were all new to their respective roles. This was exciting to take on this endeavor and the experience in delivering a truly impactful program to the customer, despite some significant barriers and challenges is a skillset they all will carry forward in other programs. The team learned and grew and was able to really *own* the D-DRT from conceptual design to delivery and ultimately seeing E-2D squadrons use these simulators immediately after final evaluations and selloff.



➤ **Clearly define the contribution of this program/project to the greater good (society, security, etc.)**

Ready to Defend. As our Armed Forces significantly increase their focus to prepare for a near-peer fight, the E-2D is critical for Carrier Strike Group (CSG) operations. System capabilities and performance parameters have exposed some limitations of current military training ranges including live aircraft quantities, geographic area representation, and tactics exploitation by potential adversary observation. E-2D aircrews need fully functional, concurrent, and distributed trainers to mitigate those limitations and be ready for all missions. D-DRT is more than just an aircrew trainer, it is the tool needed for aircrews to be ready to fight. The Collins D-DRT Team took great pride in providing this needed capability out to the fleet.

ORGANIZATIONAL BEST PRACTICES AND TEAM LEADERSHIP

Value: 35 points

Use 12 pt. Times Roman typeface

Please respond to the following prompts:

- **15 points: Describe the innovative tools and systems used by your team, how they contributed to performance and why**

Pre-Execution Program Planning (PEPP). The Collins Management System (CMS) is designed around our organizational process assets which deliver consistently superior products and services to our customers. One of these assets is called Pre-Execution Program Planning (PEPP), a process used to aid Program Leadership Teams (PLT) in program preparation. In certain cases, the company also provides a small group of PEPP Facilitators that have been given the exclusive task of supporting teams to launch programs. The E-2D D-DRT program was able to take advantage of this facilitation to lay the foundation for successful program execution by creating robust integrated program plans that would serve as the program's execution map. The support during the program's infancy was extremely beneficial considering the young/inexperienced PLT and enabled consistent, predictable performance. The detailed planning and preparation completed during the facilitated PEPP effort paid dividends throughout the program lifecycle, from proposal to contract closeout.

Atlassian Suite. At the beginning of our program, the team was reluctant to move from status quo tools to the newly-introduced Atlassian Application Life Cycle Management (ALM) software suite, including JIRA and Confluence. Initially, the program was slow to adopt these tools but after the initial growing pains, the tools proved to be effective for leadership to quickly gain the status of the program's characteristics. Primarily, the team used this suite for Risk and Opportunity (R&O) Management and the associated "issues" of mitigation and enhancement plans. After some coordination with the various programs, the portfolio was able to quickly export information contained within the database to a uniformed presentation that highlighted key R&O metrics, providing visibility to the risks and reducing time to respond and mitigate. Furthermore, our engineering team leveraged the JIRA tool to track all discrepancy reports. We were able to easily review and update while maintaining configuration management. Outputs from the system included snapshots of the overall number of Discrepancy reports, status of each by category, and the responsible engineer. These metrics allowed the team to direct resources to areas most in need.

Operations Procurement Metrics and Communications. Early in the program the team went away from the "MD4C" Procurement Status Report spreadsheet. The document held a lot of data but was too cumbersome to be useful information. We revamped the procurement document structure and associated metrics to greatly increase decision-making effectiveness. Instead of drilling into the extreme detail contained in the spreadsheet about a product, our new method was to initially provide a "dashboard of procurement progress." This consolidated information prevented us from reassessing individual part detail information inherent to the spreadsheet format. In an instant, we could now assess the progress of procurement and build.

Commons Repository for Standardization and Education. The E-2D D-DRT team greatly benefited from the teamwork and leadership embodied by the Hardware Engineering team and the Manufacturing and Operations team. These two respective groups brought a high degree of willingness to listen to each other, an earnest desire to learn from past missteps, and genuine need to do things faster and without flaws.

The Core Hardware Engineering Workspace (CHEW) is an example of the collaboration and leadership of the respective groups. This site provides a one-stop shop for Hardware Engineers and Designers looking for guidance, training, design standards and processes for a successful end product. The CHEW is dedicated to Hardware Design, Manufacturing, and Integration (HDMI) of all products within our organization. The CHEW has been established to define, implement, and maintain engineering and operational success.



- **10 points: Define the unique practices and process you used to develop, lead and manage people?**

COLLINS MANAGEMENT SYSTEM | Connecting our teams throughout the life cycle

Our value stream-based decision making framework designed to maximize customer value.

Collins Management System (CMS). The Collins Management System is an internal management system designed to improve customer satisfaction, capture rate, and performance execution. It is driven by the idea of accountability, empowerment and provides the structure for clearly defined and consistent decision-making process. The internal program isn't a one-off idea, but rather a full life-cycle framework built to guide program leaders to successful programs. The E-2D D-DRT Team greatly benefited from this system as it laid out a common, proven framework for successful program execution. Our team utilized the framework, engaged with the subject matter experts (SMEs), and leveraged the framework for execution whenever possible.

Discipline Chief. It is all too common for different portfolios to operate in a “stove pipe” manner and process best practices developed simply by remaining unique and not shared. During the start of this program, engineering leadership sought to break down these barriers and our E-2D D-DRT team was introduced to a different organizational construct that has paid dividends to our program. The newly added role of “Discipline Chief” brings in an individual whose sole responsibility is acting as a leader and a subject matter expert for entire discipline. Our group consists of Hardware, Software, Systems, and Cybersecurity Discipline Chiefs who assist in curating best practices, standardization and dissemination of approved business practices for successful implementation and aids in their respective areas. These organizational leaders coordinate best practice reviews which are held at the end of program phases, support Risk and Opportunity Management Board (ROMB) reviews, contributes to proposal writing, and provides insight and guidance during program baselining.

Meetings. One of the keys to our program’s success was simple meetings...with a twist.

Our team focused on maximizing efficiency and didn't have meetings where the team would get together and leader would open, "Ok. What do we need to talk about today?" Our meetings always had *purpose*. Our meetings had a formalized agenda that was disseminated to the team before the meeting began. We had focused meetings that included only needed people. Our week would start with PLT meeting (Program Leadership Team) where the main program functional areas would meet to discuss that week's program objectives. We met weekly with our customer, the heads of their respective functional areas (engineering, logistics, management, etc.), and ensured we were contributing to the value of our IPT by optimizing time and staying focused. We conducted Engineering Leads meetings where discipline leads would status the Technical Project Lead, navigate friction areas, and describe upcoming events. Material design and procurement issues, as well as their potential schedule impacts, were discussed at the Hardware-Operations meeting which allowed for proactive management of the supply chain and minimized impact to our schedule-sensitive program. We had critically important Risk and Opportunity Management Board (ROMB) monthly meetings. Of course, R&O's are closely tied to finances, but when we engaged in the R&O process with great attention to detail, our program succeeded, and in most cases, *avoided* risks entirely. So much attention was given to mitigation strategies, trigger dates, and impact dates that we all knew exactly what to do to avoid the risk.

➤ **10 points: How did you leverage skills and technologies of your suppliers?**

Leverage Expertise. While executing the D-DRT program, our main supplier was the E-2D aircraft OEM. At the onset of this program, it did not make sense to duplicate or re-create the E-2D aircraft OFP. The non-recurring engineering effort to even attempt this would have been very costly to our customer. The team determined that instead of duplicating, the best course of action was to leverage subject matter experts (SMEs) already available at the OEM. A subcontract was awarded to the OEM to package the aircraft OFP onto a COTS hardware solution and deliver for each D-DRT Device. This helped us not only provide full fidelity training capability with the actual aircraft OFP, but also allowed *CONCURRENCY*. The D-DRT team would receive iterative engineering OFP loads and while these were being tested on the aircraft, they were also being integrated into our simulation environment simultaneously.

**DEALING WITH PROGRAM COMPLEXITY
(VOLATILITY, UNCERTAINTY, COMPLEXITY, AMBIGUITY, or VUCA)**

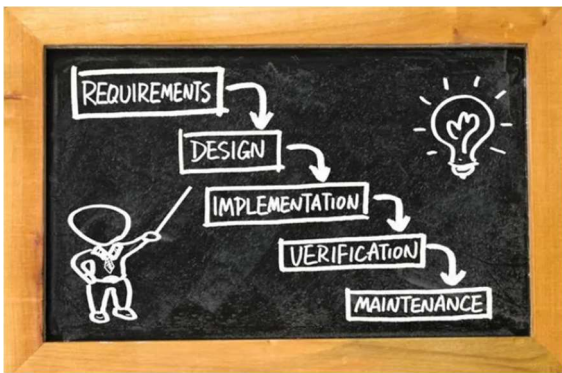
Value: 25 points

Use 12 pt. Times Roman typeface

Please respond to the following prompts:

➤ **10 points: Describe UNIQUE areas of VUCA faced by your program and why. (Please avoid the issues surrounding Covid-19 pandemic, which was faced by all programs.)**

A major part of the D-DRT program included a contract line item (CLIN) to upgrade the simulation software to incorporate the next major aircraft OFP update. Simulation software updates are similar to home computer upgrades, but on a much larger scale. The Collins pursuit team proposed handling the software upgrades using the traditional Waterfall software development process.



Our portfolio utilized this process on all government contracts as the development cycle linearly progressed through the 5 phases of requirements, design, implementation, verification, and maintenance. This method was effective because we received clearly defined requirements and a linear schedule to progress through these phases and receive approval for a deliverable towards the end of the Period of Performance (PoP).

After contract award, plans for the aircraft OFP changed. The E-2 fleet needed specific new software capabilities in the aircraft before the next major simulation software release. This obviously created a concurrency problem for our customer. While the end-user E-2 community would receive all of these updates in the next simulation software iteration, we would lose concurrency and lag the aircraft by years. With the overall concurrency goal in mind, and within the bounds of the contract, the Collins team needed to figure out a way to solve our customer's new timing problem.

➤ **15 points: Explain how your team responded to these challenges. What changes did you make, what were the results?**

The Collins software team set out to solve how to deliver an iterative software update into the D-DRT trainers. It became apparent that our current waterfall development process would not be an iterative approach without risking our schedule for final delivery. There was an answer to this but would require a paradigm shift in our engineering processes to make this work. We needed to switch to an AGILE software development process. While very familiar and widely adopted by many software development industries such as gaming and commercial, Government portfolios often lagged in implementation.

Our adaption to AGILE software execution became necessary for many reasons.

Flexibility and adaptability. Agile methods prioritize flexibility and adaptability to changing requirements and project conditions. Unlike waterfall, which follows a sequential and rigid approach, Agile allows for iterative development and encourages continuous feedback and adaptation. This flexibility enabled the team to respond to evolving customer needs and end user demands more effectively.

Customer collaboration. Agile methodologies emphasize close collaboration between development teams and customers or stakeholders. Regular interactions and feedback loops ensure that the customer's requirements are understood and incorporated throughout the development process. This collaboration helps in delivering a product that better meets customer expectations and increases customer satisfaction.

Faster delivery. Agile promotes shorter development cycles, known as iterations or sprints, which typically last from one to four weeks and for our D-DRT team, two weeks. By breaking down the project into smaller increments and delivering working software at the end of each iteration, Agile enables faster delivery of valuable features.

Early and frequent feedback. By the nature of the process, frequent feedback from our customer and end-users was necessary. By developing working software in short iterations, teams can gather feedback early in the process, identify issues, and make necessary adjustments promptly. This feedback loop helps in

reducing the risk of building a software product that doesn't meet the desired goals or requirements.

Increased transparency and visibility. Agile practices promote transparency and visibility into the development process. Daily stand-up meetings, regular demonstrations of working software, and visual tools like Kanban boards enable team members, stakeholders, and customers to have a clear understanding of project progress, impediments, and priorities. This transparency enhances collaboration, communication, and decision-making.

Continuous improvement. This process helps foster a culture of continuous improvement. After each iteration, teams reflect on their processes, identify areas for improvement, and make necessary adjustments in subsequent iterations. This iterative approach allows for incremental enhancements to the software, development practices, and team dynamics, leading to improved efficiency and quality over time.

Our team took a leap of faith. There was opportunity to improve our performance and maintain D-DRT trainer concurrency, but we would have to enter uncharted territory by learning AGILE software development at the same time we were implementing it in day-to-day operations. A proven and experienced AGILE release train engineer (RTE) was hired to aid and train our software teams and while there were growing pains and redirections, both our team and customer goals were achieved. This process allowed us to pivot and respond to the ever-changing conditions during the COVID travel shutdown, changes to software releases into the aircraft OFP, and changes to D-DRT delivery schedules based on changing fleet deployment timelines.

METRICS

Value: 15 points

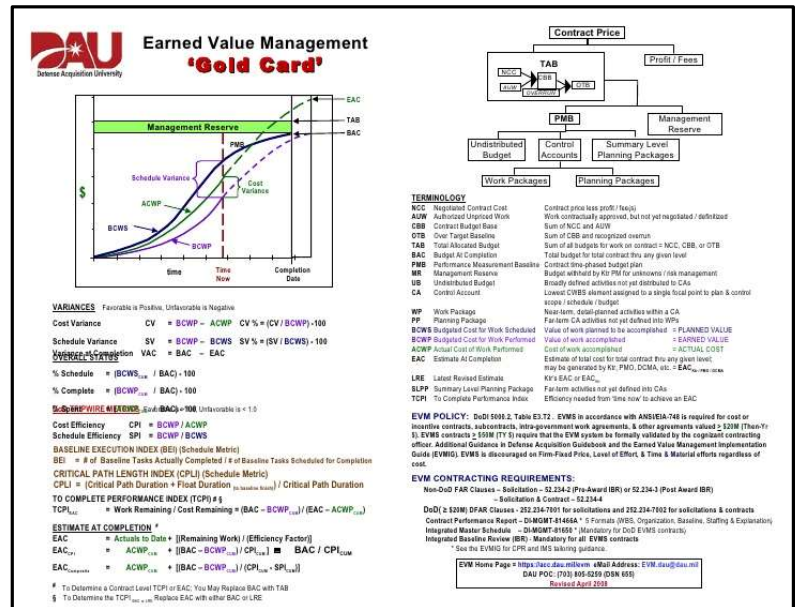
Use 12 pt. Times Roman typeface

Please respond to the following prompts, where predictive metrics indicate items that provide a view of how yesterday's actions and today's actions will affect the future timeline, cost or other requirement.

Provide charts/graphs that illustrate performance to these metrics:

➤ What are your predictive metrics?

Earned Value. Defense Acquisition University's (DAU) "Gold Card" earned value metrics was the center of our team's financial performance metrics. There is little "new" about these metrics, but we aggressively followed their guidelines and were disciplined about ensuring that the metrics were accurately portraying performance. Control Account Managers (CAM) were encouraged to report their findings— good or bad. Our team had focused their efforts on constructing a thoughtful overall program baseline and then supported the earned value process with truly quantifiable and leader-reviewed Quantifiable Back-Up Data (QBD). Ensuring that the individual contributors accurately presented data was key in identifying valid friction points that needed additional support.



Operations Procurement Metrics and Communications. The program team met weekly to discuss the status of procurement, drawing release, obsolescence, and build schedule. However, when the team first started these meetings, they were focused almost exclusively on the Procurement Status Report from our material requirements planning (MRP) System, SAP. The meeting consisted of 4-8 people in a conference room reviewing hundreds of lines of data from the SAP system. The information was current and accurate, but instead of communicating about the issues that would move our program forward, the team would spend much of the meeting simply searching in real-time for the status of needed parts.

The team decided to step away from this Procurement Status Report (the "MD4C" as it's known within SAP) as the main vehicle for communications and opted instead for a PowerPoint template that forced all those making contributions to do a *little* meeting prep to make the overall weekly cadence much more valuable. Instead of focusing on the MD4C we were able to focus on the actual issues preventing (or potentially preventing) us from moving forward on the build. The meeting template included metrics of issues that were 30/60/90 days out, drawing release schedules, obsolescence issues, pie graphs for procurement showing items on order/in inventory/etc., late parts, subcontract issues, and the critical build schedule. The revamped meeting structure and associated procurement metrics greatly increased the effectiveness of the meeting, the value of knowledge shared, and ultimately the speed with which we

were able to complete the build. The new meeting structure increased the synergies between the different departments to reduce waste and take better advantage of the respective departmental strengths.

➤ **How did you perform against these metrics?**

Effective Risk Mitigation. There was plenty of risk throughout this program, both to budget and schedule. By following our processes, risk mitigation strategies were constantly discussed, planned, and employed. In doing so, our Cost Performance Index (CPI) finished above 1.0, even with constant change to schedule and desired deliverable capability throughout this program.

Material Procurement. Early in the program the team went away from the “MD4C” spreadsheet. The document held a lot of data, but was too cumbersome to be useful information. We revamped the procurement document structure and associated metrics to greatly increase decision-making effectiveness. Instead of drilling into seemingly endless details about a product, our new method was to initially provide a “dashboard of procurement progress.” This consolidated information prevented us from wasting time talking about each individual part. Instantly we could now assess the progress of procurement and build.

Contractor Performance Assessment Report (CPAR). The Collins team took great pride in answering the call as recognized in our final CPAR report with an exception grade in quality, schedule, cost control, and management.

Collins is an innovative company, and their E-2D team is certainly leading that reputation with the D-DRT efforts. Collins’ cooperative approach throughout this effort, in every rated area, significantly supported mission capability for Fleet Training, and enhanced lethal training opportunities for E-2D Aircrew. If there is a company that can take a concept to delivery of first of type complex command and control trainer devoid of aircraft common equipment, capable of ‘high-end fight’ training, it is Collins Aerospace – RA Raoul, E-2/C-2 Training Systems Manager, Naval Air Warfare Center Training Systems Division

➤ **How do your predictive metrics drive action toward program excellence? Please provide examples.**

Opportunistic: Our predictive metrics enabled early insight into challenges, flexibility in a difficult travel and operational environment, and ultimately leading to a successful delivery 5 months ahead of the schedule. COVID-19 restrictions ground travel to a halt worldwide, which had major impact to fleet deployment schedules, caused the need for a major software delivery replan. An expected software OFP update would not get fielded, which presented the opportunity to leverage our expertise in EV process to rebaseline our efforts and combine two major software OFP deliveries into one and time it all to be when the fleet needed it the most. We were able to cannibalize all install, test, checkout, on-site evaluation schedule and ultimately deliver 2 new D-DRT devices with the newest software OFP to the forward deployed airwing in Iwakuni, JP 5 months early. The program met concurrency goals, and the squadron was able to come home to new trainers that matched the same advanced configuration as their aircraft. This greatly increased our Schedule Performance Index (SPI) and CPI to the overall program all while delivering a needed capability early.