



THE QUARTERLY GRANITE

1Q23

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BEDROCK INTERNS



TSGT CHRIS SAUNDERS
UNIT: 736AMXS

CONSOLIDATED TOOL KIT DEVELOPMENT

TSGT Saunders designed and produced multiple tools and components for the AMXS consolidated tool kit; these tools include the 1553 Data Bus Alignment tool, which prevents pins from being damaged during installation, and more rugged replacement latches for tool boxes, which will save roughly \$10k a year in replacement costs. He is currently working on the replacement of hoisting equipment for the C-17 winch installation with a cheaper, more durable option.



AIC TYLER MERICAL
UNIT: 436APS

PROMOTIONAL CONTENT CREATION

AIC Mercial filmed, directed, and edited promotional videos for Bedrock as well as educational videos for targeted topics, including an educational video for the civilian hiring process. His expertise yielded high quality content for Bedrock's social media platforms, promoting the unique breadth and depth of our capabilities. This content will help Bedrock achieve its marketing goals, increasing awareness across the enterprise.

AFRC INTERNS



SSGT SHERELLE KING
UNIT: 512AMDS

INNOVATION SUPPORT

SSgt King's time at Bedrock has been focused on Green Belt training and assisting Reserve Wing members seeking innovation support during Unit Training Assembly (UTA).

INTERESTED IN AN INTERNSHIP?

DURING A 4 MONTH PERIOD, AN INTERN WILL LEARN ABOUT DESIGN THINKING, THE INNOVATION ECOSYSTEM, AND WILL BE ABLE TO BRING VALUABLE COLLABORATIVE EXPERIENCE BACK TO THEIR UNIT!

OUR NEXT INTERNSHIP COHORT BEGINS 1 MAY - SOLICITATIONS WILL BE SENT THROUGH TMT!

02

MEET THE STAFF



MAJ MARCUS ROSENTHAL **CHIEF INNOVATION OFFICER**

Maj Marcus Rosenthal joins Bedrock following a year as the 436th Airlift Wing Chief of Plans and Programs. He is a C-17A Instructor Pilot who was previously stationed at Joint Base Lewis-McChord and the United States Air Force Academy. His educational background includes a Master's Degree in Aviation Management from Embry-Riddle Aeronautical University and a Bachelor's Degree in Social Sciences from the United States Air Force Academy. He is heavily interested in building partnership, scaling innovation projects for the Department of Defense, and giving Airmen opportunities to develop innovation solutions and create the faster, smarter Air Force of the future.

MAJ MATT FIGLIOTTI **DEPUTY INNOVATION OFFICER**

Maj Matt Figliotti joins Bedrock from the 3AS as a C-17A Instructor Aircraft Commander. With a mechanical engineering background, he brings a unique depth of knowledge to the role as Deputy Wing Innovation Officer, where he will support Bedrock's ongoing innovation efforts and connect industry, academia and DoD resources with Airmen to deliver warfighter solutions.



FAREWELL

MAJ NIK MARTINI



It brings me both sadness and joy to say goodbye to the Airmen of Bedrock and Dover AFB. It was an incredible journey for the past nine months to help guide some incredibly talented and driven individuals & teams. It was mind blowing to see what our Airmen could accomplish with the right free time, resources, and mentoring. Bedrock is a special place within the Wing, the local community, and amongst other Air Force innovation cells. It was always exciting at innovation conferences when other Spark Cells sought us out for help, because they knew of us, and we always enjoyed assisting with their innovation projects.

A huge thanks to the Bedrock staff for their work in creating an inclusive culture of ideas at Dover and their leadership within AMC innovation. Without their hard work and dedication, this facility is little more than a computer lab and collaboration space. I'd also like to thank the commander's who lent us their best airmen to work at Bedrock and intern for a few short months. The opportunity to work with the best and brightest the Wing had to offer was incredible, and still is the best job I've had in a decade of service.

Remember that saying "no" is easy, saying "yes" is hard. The status quo is the easy path, the untried or tested is hard. Destruction is easy (and we're good at that), creation is hard, but as a Force we are getting better. People matter. Our ability to think creatively and collaboratively is essential for unknown future conflicts where our partners and allies will rely on us to accomplish our mission: deliver. I can't wait to see what awesome projects the airmen of Dover & Bedrock will produce in the future!



04

INNOVATOR OF THE QUARTER

2D LT JADA POLK 436TH OPERATIONS SUPPORT SQUADRON

2d Lt Jada Polk jumped into her Bedrock internship by spearheading the effort to customize the Kingfish ACE Wargame, introduced by Maj Martini, for Dover AFB. Kingfish ACE is an incredibly complex game, and Lt Polk saw the need to create a digestible, step by step guide in order to make it more understandable and easier to learn. As Lt Polk puts it, "Once you get the game started it's easy to pick up - however, getting the game started is a challenge. Making the rules easy to understand was the main goal of condensing the guide, in order to make the game more accessible."

2d Lt Polk has highlighted the importance of innovation in her own career. Her goal for innovation is to increase accessibility and awareness of the advantage Bedrock offers, and to encourage more people to problem solve in their daily lives and have an optimistic view of innovation in the Air Force. "The innovation mindset is the cornerstone of future advancement. A fixed mindset will hinder our success as an Air Force and we need to constantly fight the urge to settle into old way."



DELAWARE EDGE GRANT COMPETITION



This February, ten small companies were honored as winners of the sixth round of Encouraging Development, Growth and Expansion (EDGE) grants by the Delaware Division of Small Business. In keeping with our community outreach efforts and previous participation in the competition, Bedrock Innovation Lab's own MSgt Brandon Vazquez was able to help judge this round.

“The EDGE Grant program is helping our state’s newest small businesses expand and innovate by providing much-needed capital assistance that these businesses may not have access to otherwise,” said Gov John Carney. “The small businesses awarded a grant in this latest round of EDGE represent the best Delaware has to offer, and





we are excited to see how the grant funds help their businesses grow.” Awardees in this round include a company that developed a school bus tracking app, a beer garden, an apiary, and an electrical company.

“With more than 27,000 small business in Delaware that employ more than half of our state’s workers and account for nearly \$14 million in wages, small businesses are the backbone of Delaware’s economy,” said Secretary of State Jeff Bullock. “The EDGE grant program provides these creative, driven entrepreneurs with the capital they need to start or grow their business and reach their full potential.” The connection between small businesses and much-needed capital is a familiar problem set for Bedrock, and we look forward to participating in the competition again in the future.



EDGE Grants

Grants for startup & early-stage businesses

-  Two classes: Entrepreneur & STEM
-  Up to \$50,000/\$100,000 (matching)
-  Wide range of eligible expenses
-  First application deadline: June 14

Encouraging Development,
Growth and Expansion

 Delaware
DIVISION OF SMALL BUSINESS

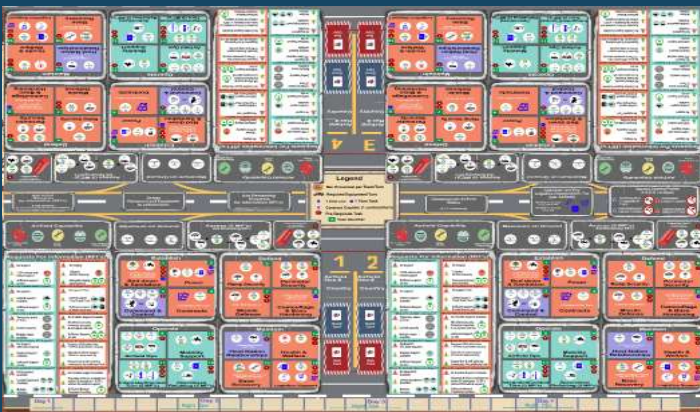
www.DelBiz.com

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EXERCISE KINGFISH ACE

EXERCISE Kingfish ACE is a wargame designed to emphasize Agile Combat Employment (ACE) concepts within a mobility mindset. Designed by Col. Troy Pierce, this game is meant to highlight a theoretical model scenario that takes place within the U.S. INDOPACOM area of operations using the ACE construct, prioritizing rapid deployment to austere locations with small agile teams. The name itself pays homage to the heritage of tactical airlift – traditionally, Tactical Airlift Control Elements (TALCE) used the call sign “Kingfish” when successfully opening airfields dating back to Vietnam. Kingfish ACE reinforces a future focus of tactical airlift, designed to be scalable, challenging, and competitive. Airmen participating in the game are first given an introductory background situation brief of the INDOPACOM AOR, and can then apply the background information received to the game play – this provides airmen the opportunity to better understand ACE and Multi-Capable Airmen (MCA) constructs in a tangible manner.

Throughout the introductory material and game play, Airmen are encouraged to work with each other in diverse teams of different Air Force specialty codes. Airmen learn components of mission planning and execution, understanding the concepts of load planning, identifying critical capabilities, host-nation limiting factors, and organizing team dependencies, all while encouraging flexibility. The game then forces Airmen to understand the relationships between these concepts, threats, capabilities and timing of a pacing challenge adversary in order to be successful. Kingfish ACE is a powerful tool to ensure Airmen are not only familiar with, but fully understand the ACE and MCA constructs, especially in the INDOPACOM AOR, a necessary step in being ready to fight the next fight.



EXERCISE KINGFISH ACE AT DOVER



Bedrock Innovation Lab was honored to host Lt Col Francis Fappiano and Lt Col Kyle Yates, from the Agile Combat Employment (ACE) Cross Functional Team at the Pentagon, as facilitators for the Kingfish ACE wargame. Utilizing the innovation workspace, Bedrock was able to host 22 airmen in the first iteration of Kingfish ACE at Dover AFB – playing Kingfish ACE, a tabletop game, greatly reduces the cost and time for a real wing-level exercise while still enhancing readiness, teaching core ACE and MCA concepts, and engaging Airmen in the INDOPACOM problem set.

“I’m familiar with the scale of Pacific logistics challenges, but I know it’s an awareness gap for some Airmen,” said Maj Nicholas Martini, Bedrock’s outgoing Chief Innovation Officer. “This game does a great job presenting that. I really liked the ‘Event’ cards, which provide real-world scenario injects, some I’ve personally experienced and recognized.” Indeed, it is thanks to Maj Martini’s leadership that Bedrock was able to bring Kingfish ACE to Dover AFB, utilizing the knowledge he gained at Rapid Global Mobility Course 3 and innovation funding to support gameplay locally.

“My favorite part of the game was seeing Airmen from multiple Air Force specialty codes across base get to know one another’s area of expertise,” said Maj Marcus Rosenthal, Bedrock’s new Chief Innovation Officer. “Building Multi-Capable Airmen begins with developing awareness and empathy for other career fields.”



08

EAGLE SOAR-EDU




Bedrock was proud to host Dover's third annual Eagle SOAR-EDU (Eagles Shaping Our Airmen's Readiness through Education, Development and Utilization) program, a continuation of the innovative professional development platform and resource hub for all Dover military and civilian personnel launched in 2020. Eagle SOAR-EDU this year featured a variety of topics and speakers, including Ms. Michelle Rogers, the 436th FSS Military and Family Readiness Flight Chief briefing about emotional intelligence, and SMSgt Bryan Harlan briefing about Mission Command the National Defense Strategy.




2023 DOVER AFB TECH EXPO



The Bedrock Innovation Lab team supported this year's annual Dover Tech Expo through a booth demonstrating our capabilities. This is the only technology event held at Dover AFB annually, and is the best way for civilian organizations to make contact with personnel who influence and make technology purchases for the base. Supporting the annual Tech Expo helps Bedrock continue to strengthen ties with our local community and maintain relationships with industry and academia to deliver solutions to the warfighter.






BEDROCK INNOVATION LAB



Your one stop shop for all things innovation

- Rapid Prototyping
- 3D Printing
- Presentation Stage
- Podcast Studio
- Collaboration Spaces
- Virtual Reality Realm
- Soundproof Thinkspaces
- SBIR/STTR Development

Connect with us!



Apple Podcasts Spotify Podcasts Bedrock Lab

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PROJECTS

FLIGHT LINE BIT CONTAINER

PROBLEM:

Snap-on Tools no longer produces the bit container traditionally used by flight line maintainers. Additionally, maintainers were looking for a product that would allow for quick detection of any missing pieces or parts - this is especially key for flight line maintainers, where lost pieces could become dangerous FOD.

SOLUTION:

Utilizing maintainers specifications for the number of parts necessary for daily use, TSgt Saunders designed a case specific to the needs of the maintainers, including magnets in the base to secure bits during transit, and a screw top to enclose the container and reduce possibility of spillage. He also included in the design a compartment for temporary screw storage, for use during maintenance needs.



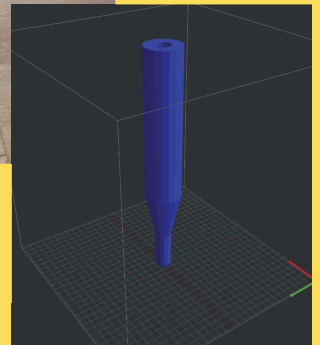
1553 DATA BUS ALIGNMENT TOOL

PROBLEM:

During installation, pins on the data bus must be perfectly aligned with the pins on the aircraft for proper installation - misalignment can easily cause significant damage to a \$100k part.

SOLUTION:

Keeping in mind the operational need and utilizing his networking skills, TSgt Saunders collaborated with Boeing to design a cheap and robust tool that had previously not been produced by Boeing. This tool ensures that the pins on the data bus are aligned with the pins on the aircraft, removing any possibility for damage or misalignment during the installation process.



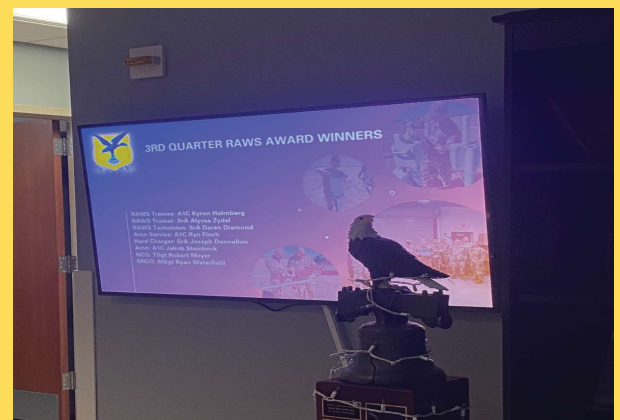
ATC RASPBERRY PI DISPLAY

PROBLEM:

With a constant flow of airmen on different shifts, ATC leadership needed a method to be able to display necessary information to their airmen. Unable to use a standalone, but with a TV on hand, ATC needed a solution for an easy display option.

SOLUTION:

Using a Raspberry Pi, Bedrock was able to create a simple process for ATC leadership to upload slides and have them run continuously on a display in the lobby of the facility. The Raspberry Pi allows for the system to run continuously and be easily updated.





APPOQUINIMINK HIGH SCHOOL EDD MENTORSHIP



Bedrock is proud to be mentoring young innovators at Appoquinimink High School – this group of students is researching and designing a potential solution to the international crisis of bird strikes on commercial and military aircraft. An estimated \$1.2 billion are lost annually by the worldwide commercial aviation industry due to bird strikes, and an estimated \$650 million are lost annually by the U.S. military and cargo aviation industry due to the same reason.

Through mentorship, the Appoquinimink group were able to narrow down their project scope to focus more on preventing bird strikes (rather than mitigating damage), utilize radar data to help guide prototype design, and share initial design ideas and concept sketches. The Appoquinimink group will be visiting the Bedrock Innovation Lab for help with prototyping and on the ground testing, and we look forward to continuing this mentorship project!





Avian Radar
Capt Joseph Stephenson
436AW/SEF





2022 – Average hourly track rates for flock-sized tracks

Greater HSR activity during hours 16-17 & 6-8, mid-October through December, most prominent.

DeDetect

Half month & Hour	Hrs with Service		Daylight hours only												No containing sunset												Night hours only												Hrs with Service
	M	S	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31					
January 1-15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
January 16-31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
February 1-15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
February 16-28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
March 1-15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
March 16-31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
April 1-15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
April 16-30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
May 1-15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
May 16-31	331	314	300	341	277	434	397	391	377	466	497	551	379	380	307	187	118	119	141	113	106	96	201	159	148	148	148	148	148	148	148	148	148	148	148				
June 1-15	177	216	195	358	284	313	362	360	357	339	260	228	225	263	253	187	84	52	45	38	32	12	388	139	139	139	139	139	139	139	139	139	139	139	139				
June 16-30	167	189	258	286	278	282	309	285	256	258	225	180	245	145	85	60	61	47	40	39	39	42	170	188	188	188	188	188	188	188	188	188	188	188	188				
July 1-15	220	220	281	325	324	329	342	321	311	291	262	190	148	148	105	68	55	54	44	42	42	177	217	217	217	217	217	217	217	217	217	217	217	217	217				
July 16-31	403	393	397	411	334	328	293	293	293	293	293	293	293	293	293	293	293	293	293	293	293	293	293	293	293	293	293	293	293	293	293	293	293	293	293				
August 1-15	502	411	277	441	455	496	489	500	549	646	646	646	646	646	646	646	646	646	646	646	646	646	646	646	646	646	646	646	646	646	646	646	646	646	646				
August 16-31	820	611	577	598	540	517	501	520	500	591	591	591	591	591	591	591	591	591	591	591	591	591	591	591	591	591	591	591	591	591	591	591	591	591	591				
September 1-15	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140			
September 16-30	796	310	294	289	255	288	289	245	258	444	410	388	278	227	227	245	242	248	212	208	187	169	169	169	169	169	169	169	169	169	169	169	169	169	169	169			
October 1-15	1054	1249	1897	1772	1898	1898	1898	1898	1898	1898	1898	1898	1898	1898	1898	1898	1898	1898	1898	1898	1898	1898	1898	1898	1898	1898	1898	1898	1898	1898	1898	1898	1898	1898	1898	1898			
October 16-31	1050	1057	1129	894	855	791	792	870	850	413	1007	850	364	273	228	196	234	278	238	208	203	183	183	183	183	183	183	183	183	183	183	183	183	183	183	183			
November 1-15	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001			
November 16-30	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001	1001			
December 1-15	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603			
December 16-31	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603	603			

• Darker colors indicate greater activity rates.
• Blue-outlined cells contain time within 30 minutes of sunrise or sunset. (October through March).

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TRAINING RESOURCES

DLIFLC GLOBAL LANGUAGE ONLINE SUPPORT SYSTEM (GLOSS)

GLOSS is a free service of the Defense Language Institute Foreign Language Center. This system offers hundreds of lessons at 4 different levels depending on the target language, with an emphasis on listening comprehension. Languages include everything from Russian to Arabic to Uzbek, and many languages in between. If you are looking to start learning a new language, or simply looking to hone your language skills, GLOSS is a useful tool for you.

<https://gloss.dliflc.edu/>



VETERAN EMPLOYMENT THROUGH TECHNOLOGY EDUCATION COURSES (VET TEC)

If you want to gain computer experience to start or advance your career in the high-tech industry, the Veteran Employment Through Technology Education Courses (VET TEC) program might be for you. VET TEC matches veterans with a leading training provider to help develop high-tech skills. VET TEC covers training in fields like computer software, computer programming, data processing, information science, or media applications with courses ranging from 250 hours to over 700 hours. If you are within 180 days of separation, or even if you want to just learn more, visit their website and learn about the application process.

<https://www.va.gov/education/about-gi-bill-benefits/how-to-use-benefits/vettec-high-tech-program/>



SYRACUSE UNIVERSITY VETERANS CAREER TRANSITION PROGRAM - ONWARD TO OPPORTUNITY (O2O)

Onward to Opportunity (O2O) is a free career training program provided by Syracuse University. This program provides professional certification and employee support services to transitioning service members, veterans and military spouses, combining industry-validated curricula, strong partnerships with leading veteran service organizations and private sector companies, along with comprehensive career coaching services to prepare and match participants with their next careers. Learn more by visiting their website.

<https://ivmf.syracuse.edu/programs/career-training/>



PODCASTS

13



KINGFISH ACE, THE BOARD GAME

On this episode of The Bedrock Podcast, Maj Nik Martini and MSgt Brandon Vazquez recap 3 days of playing the Kingfish ACE scenario board game. They talk with game facilitator, Lt Col Fappiano, and Team Dover's A1C Hoyt, who was a team leader during the game.



APPLE



SPOTIFY



GOOGLE PODCASTS