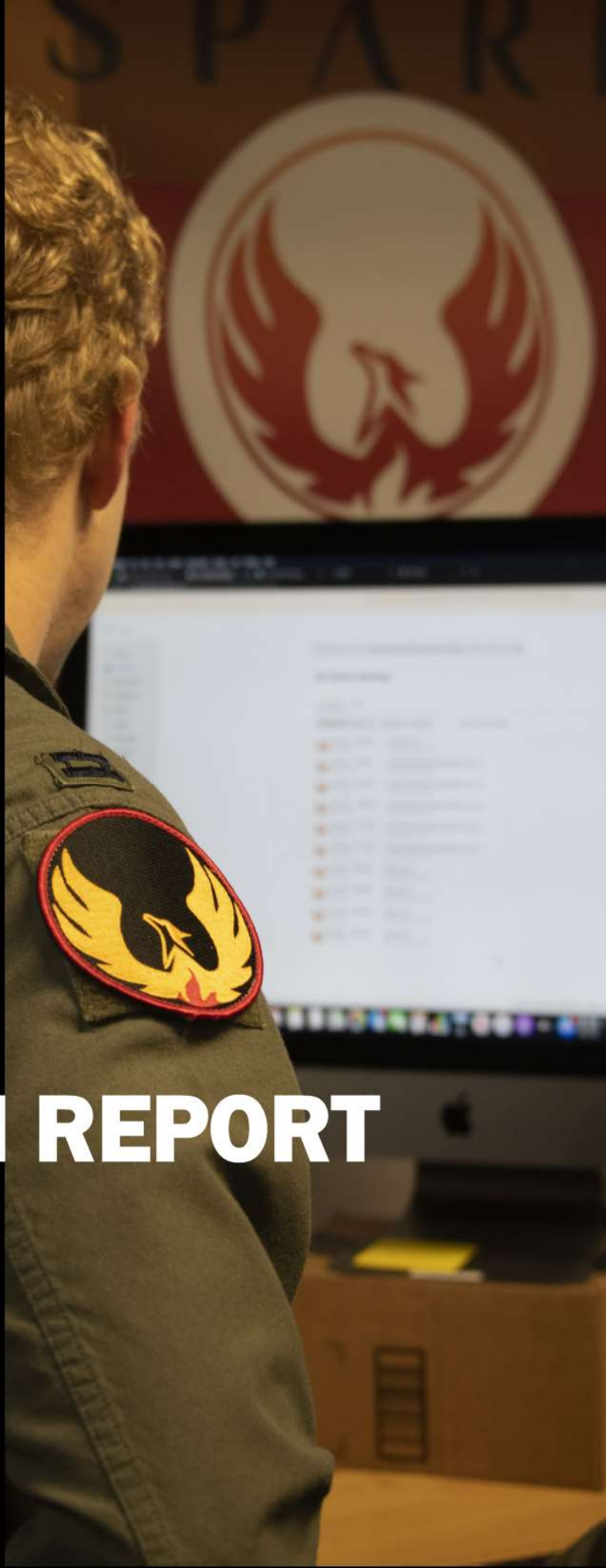


PHOENIX SPARK | TRAVIS AFB, CA

TRAVIS AFB INNOVATION REPORT

May 2020



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SPARK OVERVIEW

Mission

Developing and connecting the best and brightest innovators to solve everyday problems our Airmen face.

Vision

Fully empowered Airmen innovating at the speed of relevance to enhance the Team Travis mission.

Priorities

- Increase Lethality
- Return Time to Airmen
- Empower Airmen at the Lowest Level
- Reduce Cost



SPARK FOCUS AREAS

Problem Statement

The Warfighter has relatively minimal say on the end product and may receive the technology after it's already irrelevant. The defense establishment must immediately shift this paradigm if it wants to succeed in the era of great power competition and advance beyond our adversaries' capabilities. Travis Air Force Base's Phoenix Spark Hub sets out to be the leader in bridging the gap between the operator and agile organizations/companies who are motivated to rapidly develop capabilities the Warfighter deserves.

Additive Manufacturing



Additive manufacturing, or 3D printing, has proven that it can enable the Warfighter to print material at the point of need versus having to operate under restricted time schedules. Airmen are able to enhance their sustainment capabilities, minimizing costs associated with having to contract, purchase, transport, and store additional resources.

Data and Digital Environments



In the growing world of technology, cyber and digital infrastructures are one of the fastest growing industries. As the environment rapidly changes everyday, we strive to keep our Airmen informed on recent developments in the field that can both benefit and threaten our way of lives.

Augmented & Virtual Reality (AR,VR), Automated Vehicles



Traditional training and workflows in the military are conducted using legacy products in the form of a specific technical order, instruction manual, tactics/techniques/procedures publication, or checklist. Virtual reality is an emergent technology that will allow the operators to fully immerse themselves in various training scenarios. AR/VR/XR solutions have wide applicability across every unit at Travis Air Force Base.

Small Unmanned Aerial Systems (sUAS)



Small UAS tactics, techniques and procedures are not keeping pace with innovation, the demand for capability, or the growing threats emerging from malignant actors. The massive proliferation of extreme-low-cost and autonomous aviation technologies, commonly referred to as sUAS or "drones," creates a paradigm shift in the way global mobility operations are conducted. We are working on staying ahead of the wave!

KEY ENGAGEMENTS

April

1-Now PPE PARTNERSHIP: Phoenix Spark develops protective equipment with the 60th MXS, DGMCC, and AGE as the Fight against Covid-19, along with preparing for future outbreaks, continues. [Link](#)

1-Now AFWERX COVID TEAM OF TEAMS: Spark Cells across the globe, hosted by AFWERX, continue to meet each week to trade real-time developments in the struggle to mitigate Covid-19 in the DoD. [Link](#)

19 PHOENIX SPARK CHIEF LAUNCHES MATTERMOST: Mattermost system admin, Maj Justin Poole, activities the program as a primary C2 Communication Platform for Travis AFB. 36 SQs across the wing and AMC are able to transmit FOUO data, and utilize VTCs amongst the warfighters to execute the mission! [Link](#)

May

20 COMMERCIAL SOLUTIONS OPENING (CSO) 2020 TRAVIS, AFB: Travis AFB first ever CSO! 21 representatives from 13 military organizations and five companies participate in a commercial solutions opening event May 20, 2020, at Travis Air Force Base, Calif. Due to the coronavirus pandemic, the event was held online using video-conferencing software. Military members and representatives from five companies at 21 different locations participated in the event. [Link](#)

June

1 NSIN's X-FORCE FELLOWSHIP KICKOFF: In a partnership with UC Berkeley and Stanford, 6 top engineering graduates will work with Airmen at Travis AFB to tackle two major problem sets:
1) Creating a better Controlled Tool Kit Solution for Aircraft Maintainers
2) Developing connectivity in the Flight Line of the Future Project. After 3 months, they will have working solutions for both projects that are owned and operated by the Air Force. [Link](#)

09 H4D CHALLENGE "TIME FLIES" PRESENTATION: A team of engineers and former aircrew have been researching and developing a solution to the aircrew scheduling problem for months! In conjunction with McConnell Spark Cell, Stanford University, and NSIN, they now present their results. Special guest speaker Former Secretary of Defense General "Mad Dog" Mattis. [Link](#)

July

15 PHOENIX SPARK MOVING TO WEST COAST CENTER FOR INNOVATION (WCCI) BUILDING 241: At long last, the Phoenix Spark Team will begin moving it's operations into the newly renovated lab in BLDG 241 on Travis AFB. The building will have modular innovation spaces, latest array of 3D printers, Computers w/CAD, and more. Stay informed for our Grand Opening in September '20!

15 CLOSE OUT OF FY20 SQUADRON INNOVATION FUNDS (SIF): The Chief of Staffs SIF FY20 campaign will officially be closed for submissions. \$675K in Air Force Funds was allocated to Travis AFB so Airmen across the base could fund their innovative solutions. Many of the ideas can be viewed on Idea Scale at #NoBounds Campaign. Individuals have until 24 June to submit an idea to be funded! Contact us for more information. [Link](#)



BY THE NUMBERS

SMALL BUSINESS INNOVATION RESEARCH (SBIR) TRAVIS, AFB

6 active phase I projects totaling **\$250K**

12 active phase II projects totaling **\$12.75M**

INNOVATION PROJECTS

22 under Active Management

SQUADRON INNOVATION FUNDS (SIF) FY20

Currently **\$421,550.80** of **\$675K** Obligated

AIRMEN INSPIRED

March

500~ through FTAC/ALS/NCOA/Chief's Chats/
SLICC '20

June

+200 through PPE working group, X-Force, CSO 20',
SBIR Initiatives.



INNOVATION PIPELINE

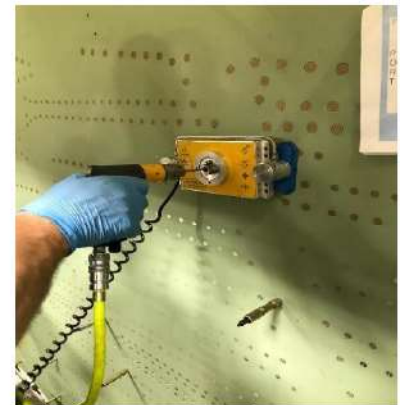
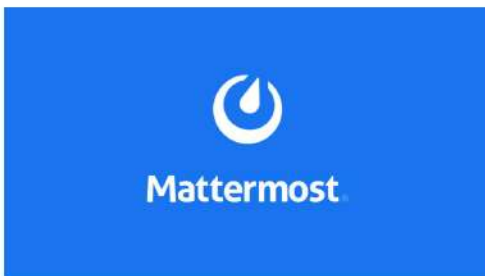
Squadron Innovation Funds FY20 Execution Plan

The establishment of Squadron Innovation Funds (SIF) by the Chief of Staff of the Air Force is aimed at Airmen-led solutions that increase readiness, reduce cost, return time back to Airmen, or enhance the lethality of the force. Travis' #NoBounds innovation campaign motivates our best and brightest Airmen to think and act like a startup delivering solutions to their problem statements at the speed of relevance. No idea is too big or too small. Termini Non Existent...There are No Bounds!

The campaign seeks to collect problem statements and ideas from Airmen across the Wing with the goal of finding relevant solutions to fund. Airmen who submit their idea will be asked a series of refining questions to gather data and information by Spark staff members, who will aid throughout the process. All ideas will then be presented to Col Nelson for approval. All idea holders will be notified immediately. Below are some ideas/products that were funded by the FY20 SIF Campaign!

Timeline

24 Jun 2020	Final Ideas submitted for Wing Leadership
26 Jun 2020	Final Ideas executed for
15 July 2020	All O&M SIF executed



JACOBS INSTITUTE FOR
DESIGN INNOVATION
COLLEGE OF ENGINEERING, UC BERKELEY

INNOVATION PIPELINE

Commercial Solutions Opening (CSO) Travis AFB, CA

The 60th Air Mobility Wing Phoenix Spark Team virtually hosted its first CSO event at Travis AFB on 20 May. A CSO is a strategy used by the Department of Defense to acquire innovative commercial items, technologies or services that directly fulfill requirements, close capability gaps, or provide potential technological advances, according to a memorandum from the Office of the Under Secretary of Defense.

During the event, representatives from five companies shared innovative ways to enhance the Travis AFB mission with base organizations, using video-conferencing software. Planning for the CSO began 18 Feb when the 60th Contracting Squadron requested companies submit their ideas on how they could help enhance operations at Travis AFB. Each company that submitted a proposal had to be a small business, provide a background paper on their company and explain how their solution could benefit Travis AFB, along with the cost of that solution. For this CSO, proposals had to be \$30,000 or less and every proposal was carefully vetted by the 60th Contracting Squadron. Funding for approved proposals will be paid for through SIF, more than \$64 million Air Force allocated service-wide to pay for innovation initiatives at the unit level. The CSO featured 40 participants, including 13 organizations at Travis AFB. Participants called in from 21 different locations and adhered to physical distancing requirements throughout the event. Total allocated funds are below:

Awards

Personnel Alert - **\$30,000.00**

AR/VR Forklift Training for LRS - **\$25,400.00**

AR/VR Training for 21 AS, OSS, DGMC - **\$99,500.01**

AR/VR Defender Training for 60th OSS - **\$30,000.00**

Total Amount: \$184,900.01



INNOVATION PIPELINE

Small Business Innovation Research (SBIR) Projects: Phase 1

360 Degree Training Videos

DVI Group and KC-10 FTU

Purpose:

Render and create sustainable training videos for the KC-10. DVI group is able to render recorded 360 degree videos and insert questions tailored to what the viewer is experiencing.



Medication Reminder App

DGMC & Dos Cast

Purpose:

The 60 MDTs Pharmacy has an urgent need to improve workflow processes to increase both beneficiary and staff satisfaction, as well as provide a more effective and efficient mechanism for patients and pharmacy personnel to manage medication therapy. The implementation and adaptation of Montuno's Dosecast digital medication management app will function to advance personnel readiness, safety, and improve health outcomes. Further, Dosecast contributes to the Military Health System's Quadruple Aim by increasing readiness, providing better care, better health, and lowering overall costs.



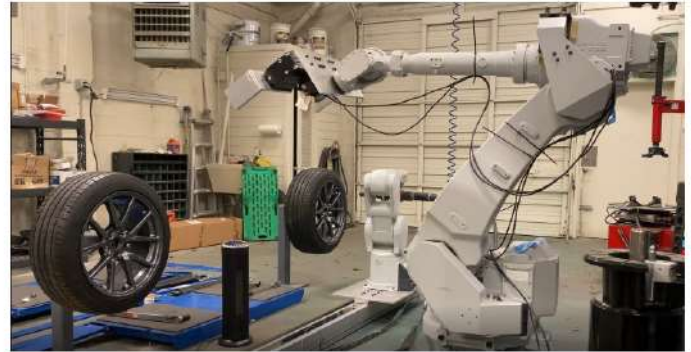
INNOVATION PIPELINE

Small Business Innovation Research (SBIR) Projects: Phase 1

Tire Changing Robots

Robotire and 60th LRS

Purpose: Changing tires on fleet vehicles is often takes a significant amount of time, manpower and is inherently unsafe. However, robots can do the same tasks in a fraction of the time! With the help of Robotire, 60th LRS hopes to utilize Robotire's product to better fulfill Maintenance and tire repairs on vehicles.



Digital 781s & Commercializing Flying Time

21 AS & MilKeep

Purpose: Paper products are quickly becoming a part of the past. They're environmentally costly, arduous to manage, and only allow for limited distribution. With MilKeep, The 21 AS C-17 Squadron is hoping to begin digitizing their 781s for Loadmasters and Pilots. It will allow for ease of use in tracking currencies, hours, and air medals for aircrews. It can also convert a pilot military time to civilian time for the airlines.



INNOVATION PIPELINE

Small Business Innovation Research (SBIR) Projects: Phase 1

Digital Aircrew Scheduling

21 AS & Puckboard

Purpose: The world of aircrew scheduling has long been a pain point among flyers and schedulers. It's difficult to constantly maintain a working schedule on white boards without constant input or flexibility of the schedule. The 21 AS wants to make life simpler for both parties by procuring a solution that is easy to manage, quickly identifies potential scheduling errors, and can easily disseminate the information to applicable members.



INNOVATION PIPELINE

Small Business Innovation Research (SBIR) Projects: Phase 2

Mesh Radios for Flight Line of the Future

60th MXS & Huckworthy

Purpose: Mesh network enables adaptive edge connectivity (with encryption) including Wi-Fi, 4G LTE and eventually 5G. Assures that the flight line can always adapt to new technology. Establishing dependable wireless capability on the flight line will enable maintainers to read/write most current data available to G081 without work disruption or time latency that reduces input quality and connectivity opens the door for more robust technology solutions Boeing can bring to bear.



Expeditionary & Agilely Deployable Additive Manufacturing

821st Contingency Response Squadron & Origin Laboratories

Purpose: Iterate and evolve candidate 3D printed components that enable the CRS to better perform their job when in the field. The impact of this project will be a more agile response to needs, improved efficiency of component supply chains in expeditionary situations, and increased adaptability to required repairs.



INNOVATION PIPELINE

Small Business Innovation Research (SBIR) Projects: Phase 2

Advanced Perimeter Security and Situational Awareness Using Autonomous UAS

60th Security Forces Squadron & Easy Aerial

Purpose: Working w/Easy Aerial in testing and developing a prototype autonomous aerial monitoring system that deliver advanced perimeter security and situational awareness using autonomous self-deployed drones.

Update: 3 autonomous, 2 tethered units.
Autonomous: auto hover, predefined tracks
Tethered: 12hrs aloft, encrypted feed.
Operational: 01 Jul 20



Improving Base Physical Security Assessments

60th Security Forces Squadron & ARES Security

Purpose: Develop, install and demonstrate a prototype AVERT Virtual Tabletop and AVERT Virtual Reality Training solution at Travis AFB. Evaluate the use of AVERT Virtual Tabletop and AVERT Virtual Reality Training to improve security training effectiveness and fit to Travis AFB Security Squadron needs.



INNOVATION PIPELINE

Small Business Innovation Research (SBIR) Projects: Phase 2

Automated Care Plan for EFMP Families

60th Medical Group & CareStarter

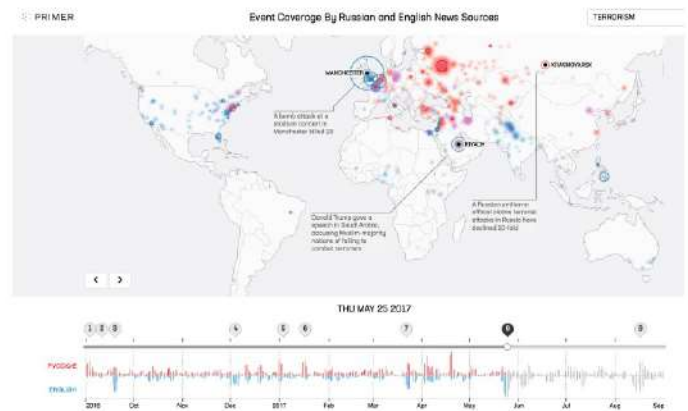
Purpose: CareStarter automates and scales care management to all Exceptionally Family Member Program (EFMP) beneficiaries across well and special care. They empower physicians/pediatricians to focus on medical mysteries/diagnosis to deliver resources to patients and their families, advancing patient-centered care and providing persistent information to empower them to make better health decisions. CareStarter is well-equipped to assist any EFMP-focused organization engage, support, and resource the families with which they work.



Efficiently Processing Real-time Intelligence Data

60th Operations Support Squadron & Primer AI

Purpose: The mission impact of this project on the Air Force and the Department of Defense will be to enable analysts to exploit 2,500 intelligence reports in the time it would normally take to read, digest, and comprehend one report. Ultimately this would result in more rapid dissemination of higher quality information, cutting the time curve to decision advantage.



INNOVATION PIPELINE

Small Business Innovation Research (SBIR) Projects: Phase 2

Maintainer Workflows & Field Support in Augmented Reality

60th Maintenance Group & Mira Labs

Purpose: The impact of this project will be enhanced operational functionality by providing Airmen with a mobile platform to deliver improved AR (Augmented Reality) training and support. Utilizing AR in the field will allow for hands free servicing, maintenance, and operations. It will also allow for direct connectivity and visuals with supervisors while on site.



Haptic Glove Feedback for Virtual Reality

22nd Airlift Squadron/RSO & VrGluv

Purpose: VrGluv is a haptic glove for VR built to break down the barriers between you and your virtual environment and immerse you in it. VrGluv combines precision hand tracking and force feedback technologies to seamlessly transport VR objects right into your hands. Planned use is a refueling training interface program.



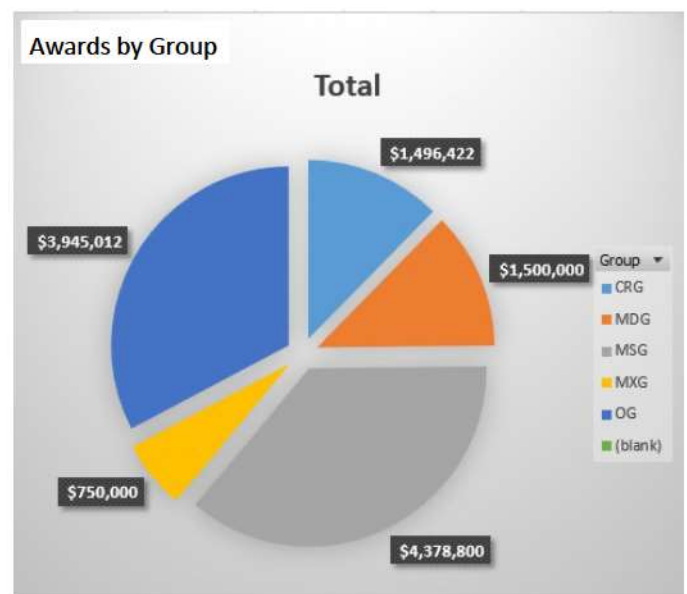
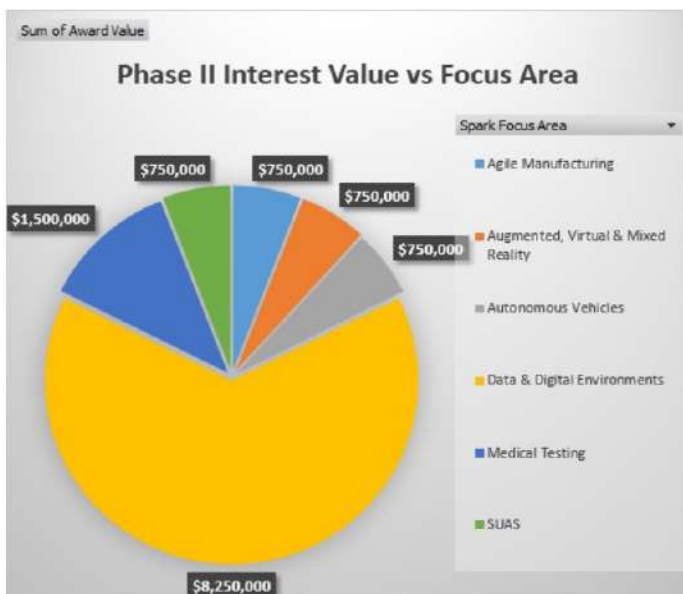
INNOVATION PIPELINE

Small Business Innovation Research (SBIR) Projects: Phase 2

Aircrew Training in Virtual Reality

22d Airlift Squadron/KC-10 Formal Training Unit & Sketchbox 3D

Purpose: Increased AR/VR design capabilities to provide Airmen with an advanced platform to design and execute complex AR/VR training simulations. They have developed an emergency escape testing program, virtual loadmaster preflight checklist and a 360 degree AR (Air Refueling) instructional video.



INNOVATION PIPELINE

Airmen-Led Innovation Projects

KC-10 EFB Mount

TSgt Bernie Rowe, 6th ARS

Problem: The Electronic Flight Book (EFB) doesn't have a specific mount in the aircraft. This causes the EFB to be loose in flight for the engineers.

Solution: 3D design and prototype a mount for their table top with a Carbon Fiber Weave, to withstand the rigors and stress of flying.

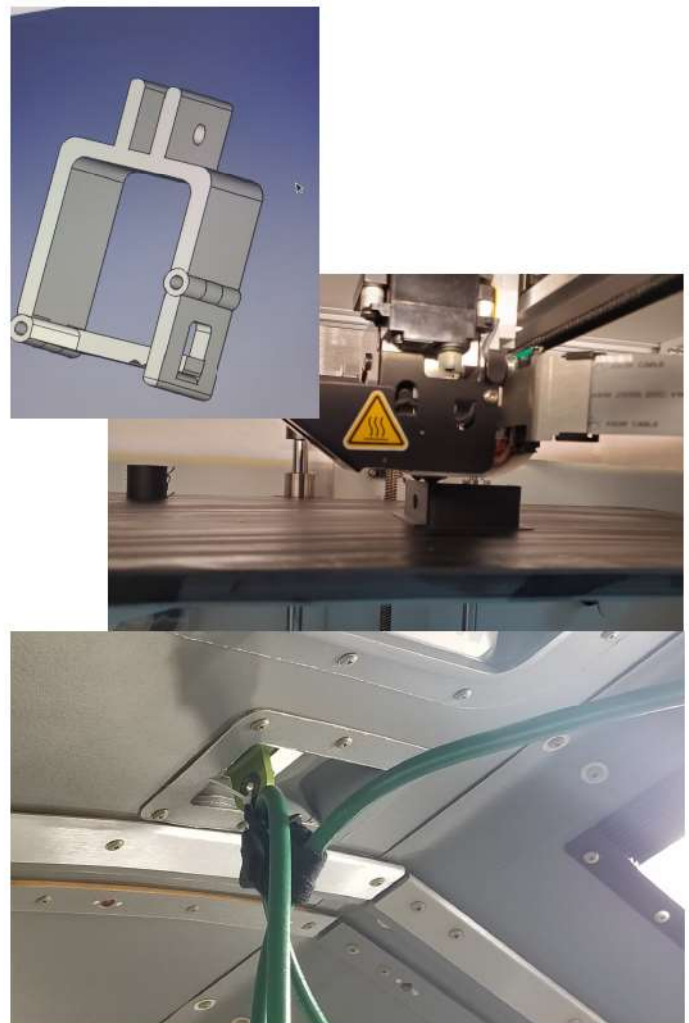


KC-46 AE Line Mount

SSgt Brendon Bowman & Tristen Meadors, 60th AES

Problem: Currently, AE is using countless zip ties to hold oxygen and life support lines in the AC. This costs excessive money and disposable plastic.

Solution: A mount was 3D modeled & printed by the Spark team that can be used continuously. It has a quick release clamp and a large opening to feed cables through.



APRIL

INNOVATOR SPOTLIGHT

Master Sergeant Alan Ebanks

Innovative Pioneering

When it comes to innovation, it requires the efforts of a team and individuals taking personal ownership to keep pushing the momentum of the project. MSgt Alan Ebanks is that individual for the month of April!

Alan has brought 3 SBIR company solutions to Travis AFB:

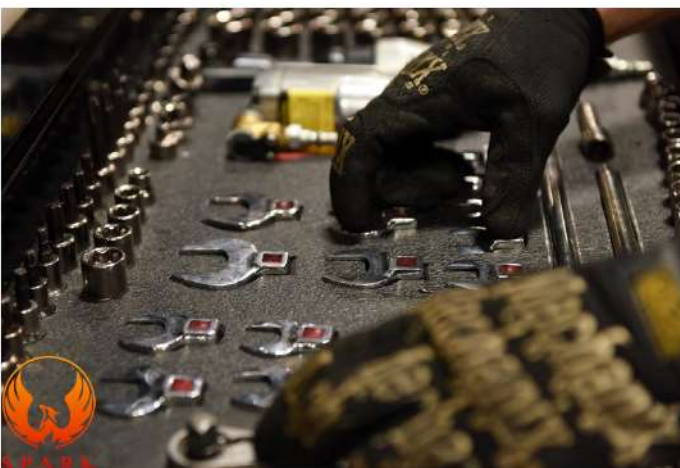
1. Kodiak Automated Vehicles (AV) - AV for Aerial Port to carry equipment and possibly fuel to aircraft on the flight line w/fleet vehicles.
2. NEA Inspection Drones- Drones for aircraft maintenance (AMXS) to perform inspections on the top of hard to see T-Tails and aircraft sections.
3. Huckworthy Mesh Radios- Creating encrypted, reliable wireless connectivity to all personnel and vehicles on the flight line at over 3,000 ft from the building!

Alan also formed technical POC Teams on two separate NSIN X-Force Fellowship Projects at Travis AFB, the Custom Toolkit and Flight Line of the Future. These two teams require constant input and coordination with 6 top engineering students to aide them in developing solutions in two months for the base.

Lastly, Alan and his team are devoted to developing the Maintenance Truck of the Future, which will create safe, connected and ergonomic transport for Travis maintainers as well as their tools, parts and support equipment.

For spearheading so many innovative efforts for Travis AFB, MSgt Alan Ebanks is the April, Travis Innovator of the Month.

Keep leading by example!



MAY INNOVATOR SPOTLIGHT

Captain Jennifer Walters

Finding the Pain Points!

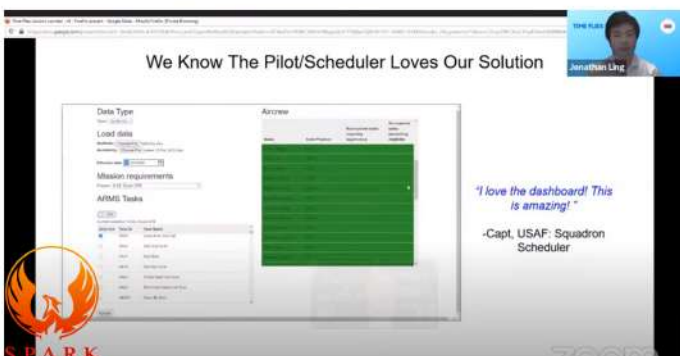
Anyone who is involved with aviation and the rigorous, strict timelines involved knows the pain of scheduling events in such an environment. As a pilot, Jen decided to help her squadron out by finding the best solution to help the scheduling team.

Jen has been working with Trifacta under a \$750K SBIR award to produce an innovative product for the squadron scheduling department at the 9th ARS. Trifacta transitions the scheduling process from white boards to the digital spectrum employing Artificial Intelligence (AI) to tackle the unsolvable problem of aircrew scheduling. But she didn't stop there!

In parallel, Jen began working with a team from a Hacking for Defense (H4D) project by NSIN called "TimeFlies". The team of 5 was comprised of engineers, pilots, and data analysts whose purpose was to discover a bottom up approach to the scheduling problem. She was instrumental in giving the team required data, access, and input to make the solution viable, which was presented at Stanford University on 09 Jun 20' to 900 people online. General "Mad Dog" Mattis was even the guest speaker!

Jen will also be representing Travis AFB with the Phoenix Spark Team Exhibition at AFA's Air Space in Cyber Conference, along with volunteering as an ASC Moderator for Covid-19 Response.

For her relentless energies to helping flight scheduling and her tenacious innovation efforts, Captain Walters is our Innovator for the month of May.



OUTREACH

Spark Revolution Podcast

Episode #4: The fight against Covid-19!

3D Design Bootcamp

6-7 July 2020

FTAC Innovation Introduction

Returning Soon

Innovation Slack Channel

Please send us an email below on how you can contribute to be added.

SOCIAL MEDIA



Instagram

@PhoenixSparkTravis



LinkedIn

[linkedin.com/company/PhoenixSparkTravis](https://www.linkedin.com/company/PhoenixSparkTravis)



Website

www.TAFBSpark.org



Spark Revolution Podcast

<https://soundcloud.com/travis-spark>



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