***This Report was prepared under contract with the Utah Governor’s Office of Economic Opportunity (Go Utah) as the lead organization of the Utah Defense Manufacturing Community (UDMC), with financial support from the Office of Local Defense Community Cooperation, Department of Defense (OLDCC). The content reflects the views of the Utah Defense Manufacturing Community (UDMC) and does not necessarily reflect the views of the Office of Local Defense Community Cooperation.***

***During this quarter under the Defense Manufacturing Community Support Program (DMCSP), the objectives focused on program execution, program partner engagement, and continuing operations.***

***While working on program engagements we placed special emphasis on any efforts that aid in the diversification of the defense supply chain, reduction of procurement costs and/or improvement of procurement processes, and increasing the capacity of the defense workforce. The following activities describe those efforts.***

**Key Accomplishments:**

UMDC programs reached more than 1000 students, worked with 150 schools, included over 15 courses/workshops/seminars, and assisted in submitting 11 STTRs.

**Workforce**

Our various programs conducted courses/programs reached over 1000 students, included 150 schools, provided over 15 courses/workshops, and served 6 companies.

**Supply Chain**

Our supply chain efforts have reached over 100 companies. The CONNEX supply chain platform underwent a major update, workforce programs included in CONNEX is 54.

**Research**

Under UDMC, 0 new research projects this quarter, but 67 total that support defense manufacturing by Utah’s research institutions were identified and a major UDMC-funded event was accomplished.

**Small Business**

Under the various small business programs, there were 150 attendees from more than 15 companies and over 15 workshops.

***Pillar 1: Workforce***

***Objective/task title: Task 1.0***

***Objective/task description:*** Utilize Utah Works to address the unemployed and underemployed through retaining and retooling, in order to meet the needs of the defense industry.

***Narrative of achievements:***

A total of 156 students were served in 9 different programs most of which were incumbent

workers participating in these programs as early employment.

Aerospace Assembly Composites

- Students served 25

- Industry partners served 2

Aerospace Assembly Metals

- Students served 14

- Industry partners served 1

Thermoforming Technician

- Students served 6

- Industry partners served 1

Injection Molding

- Students served 5

- Industry partners served 1

Certified Nursing Assistant w/ ESL

- Students Served 5

- Industry Partners Served 0

***Quantitative/qualitative output and/or outcome (accomplished or expected):***

- Number of students who participated in the Utah Works Program: 63 in the quarter, 156 for the year

- Number of students who completed the Utah Works Program: 49 in the quarter, 50 for the year

- Number of Students that had job placements because of Utah Works (# hired by participating business): 29 in the quarter, 89 for the year

- Number of new Partners/Programs added to Utah Works: 6 in the quarter, 12 for the year

***Objective/task title: Task 1.1***

***Objective/task description:*** Increase and expand Career Pathway Programs. Talent Ready Utah (TRU) contracts with Davis Technical College (DTC) to expand the Utah Aerospace Pathways program through the development of coursework at both the secondary and post-secondary level, program setup, and offer exploration experiences to increase student interest and engagement, culminate with a work-based learning experience in the form of an externship or project that is hands-on and has real-world application to increase capacity in the workforce for the defense manufacturing community.

***Narrative of achievements:***

In February the UDMC hosted Composites Day on campus. We had 150 high school students who visited local composite employers and then had a tour of our main campus Composites program. They got to work on projects and talk to our instructors. They also had lunch and heard from our local partners about the job possibilities in the Composites industry.

We are continuing to track the enrollment of students within our program. Syracuse High School has 50 students, Northridge has 42 students and Clearfield has 3 as of today. The second semester began in January and ends in mid-March, so these numbers should be accurate through the end of the school year. Students will continue to work towards program completion. Davis Tech will be hosting a Senior Week on our main campus in March. We will help our high school students who are close to program completion with their next steps. We are also continuing to grow our relationships with industry partners such as Northrup Grumman to show our students the many employment opportunities once they have graduated and completed the pathway.

**America Makes**

Objective: TALENT READY UTAH (TRU) will expand existing programs to include Defense Manufacturing.

Better access to skilled talent for defense companies, career mobility for workers, and pathway opportunities for Utah’s workforce.

Task 1.0 Expand Utah Works to meet labor needs within the defense manufacturing industrial base.

Task 1.1 Increase and expand career pathway programs.

Task 1.2 Encourage work-based learning and apprenticeships.

Task 1.3 Expand Systems Engineering education and training in Utah.

America Makes collaborates to leverage best practices from the EWD library and engagement of members where applicable. Examples include apprenticeship frameworks, credentialing programs, bodies of knowledge, Girl Scout Additive MFG Patch Program, Middle School Recruitment Toolkit, Microlearning for Middle School through High School/Adult learners, Additive Edge – high school awareness and inspiration program.

During Q2 2023: America Makes continues its collaboration efforts with Granite Technical Institute. Most recently, America Makes successfully deployed newly developed High School/Adult microlearning modules to Granite Technical Institute. The new modules, shown in Figure 1 in Attachment\_3 Task 1.5, are aimed at high school to adult-aged learners. These eight microlearning modules feature a series of short interactive lessons to introduce students to the basic elements of additive manufacturing (AM). Each module demonstrates a unique step in the AM process, beginning with an introduction to additive manufacturing, continuing through CAD software instruction, basic printer operation, and troubleshooting, as shown in Figure 2 in Attachment\_3 Task 1.5. As we continue to create new content and modules, we will continue offering our educational assets to further technology and career exploration. Many of our educational assets can be found at America Makes’ AMNation Pipeline Portal (<https://amnation.americamakes.us/>).

In addition, the UDMC is working on creating and deploying additional microlearning modules for high school/adult learners that will explore expanded additive manufacturing topics such as resin printing, design for additive manufacturing, qualification and certification of parts, safety and cybersecurity. Upon completion, the America Makes team will begin our deployment to partners in the Utah Defense Manufacturing Community.

America Makes continues to support the opportunity for Granite School District to deploy the America Makes NOCTI (National Occupational Competency Testing Institute) Essentials of Additive Manufacturing (AM) credential for high school students created in partnership with America Makes funded through a grant provided by the National Institute of Standards and Technology (NIST). For employers, credentials are an assurance a candidate has the industry-relevant skills, knowledge, and support needed to produce a highly agile additive manufacturing workforce. For a rapidly growing field like additive manufacturing, this is especially important in building workforce pipelines. This Essentials of AM credential not only serves as a validation of student skills but will also provide connections to the industry and can serve as a bridge to professional-level certifications.

During this quarter, America Makes met with the Computerized Numerical Control (CNC) instructor at Davis Technical College to provide an overview of our America Makes Education and Workforce portfolio and offered the opportunity to access the newly created High School/Adult microlearning assets, as well as the opportunity to collaborate on our Ultimaker 3D partnership that will provide 3D printers to middle and high schools, community organizations, and non-profits deploying our America Makes’ educational resources across the country with the goal to grow awareness, inspiration, and entrepreneurship opportunities for 3D printing technology among young women and diverse groups and communities.

America Makes is continuing conversations with Weber State University to explore opportunities in bringing adult microlearning assets to English as a second language (ESL) programs. These interactive, digital learning assets could be deployed to students who have shown English language proficiency and are now continuing their education in the computer science cohort. The process of directly connecting real-world relevance in project-based learning has been a proven methodology for assisting in the growth of language and understanding for ESL Learners. As part of their computer science cohort, students would be guided through problem-based learning as well as rigorous modules through the AMNation Pipeline Portal. Weber State would have a custom dashboard in which they can track learner progress as well as continue to assist with sustainability and impact. America Makes is dedicated to supporting programs across Utah through this effort and will continue to work closely with Weber State to build a custom deployment strategy.

***Quantitative/qualitative output and/or outcome (accomplished or expected):***

- Total number of Pathway students: 95

- Total number of schools: 3

***Objective/task title: Task 1.2***

***Objective/task description:*** Expand the Talent Ready Apprenticeship Connection (TRAC) to defense manufacturing companies and establish it as the state’s youth apprenticeship center.

***Narrative of achievements:***

- All TRAC students have passed their AMFG and general education courses in the Fall.

- New “Year 0” students will be able to take AMFG 1100 in the Spring instead of waiting for summer

- 14 Year 0 students are expected to enroll, the largest cohort yet!

- SLCC is working on building degree maps for students that are interested in continuing their education and earning a 4-year degree

- Multiple tracks: Engineering, Business

- Beginning to plan for the second graduation in August.

- Skyler Nutall, a graduate from the first cohort, has gained yet another promotion to Production Coordinator. Previously he was a Warehouse 2 Foremen

- Successful recruiting in the fall has led to a large incoming spring class (14 expected students)

***Quantitative/qualitative output and/or outcome (accomplished or expected):***

- Number of students that participated in TRAC: 28

- Number of students that completed TRAC (*the first cohort is not scheduled for completion until summer 2022*): 24

- Number of students that had job placements because of TRAC (*all students are currently employed as apprentices at Stadler Rail*: 28

***Objective/task title: Task 1.3***

***Objective/task description:*** Expand Systems Engineering Education and Training in Utah.

***Narrative of achievements:***

Weber State University has produced many successful system engineering graduates who have gone on to achieve remarkable success in their careers. Here are examples:

- Derek Harkness: Derek Harkness is a Weber State graduate who currently works as a System Engineer at Boeing. In this role, he is responsible for designing and testing new aircraft systems. Harkness credits his success to the education and training he received at Weber State, which gave him the technical skills and problem-solving abilities he needed to excel in his career.

- Todd Mosher: Todd Mosher is another Weber State graduate who has achieved success as a system engineer. He currently works as a Senior Systems Engineer at Northrop Grumman, where he is responsible for designing and testing advanced radar systems. Mosher credits Weber State with giving him a strong foundation in systems engineering and helping him develop the critical thinking skills he needs to succeed in his role.

- Tom Roscoe: Tom Roscoe is a Weber State alumnus who has worked in the aerospace industry for over 30 years. He currently works as a Senior System Engineer at SpaceX, where he is responsible for designing and testing advanced rocket propulsion systems. Roscoe credits Weber State with giving him a strong foundation in systems engineering and helping him develop the problem-solving skills he needs to succeed in his career.

- Chris Ritter: Chris Ritter is a Weber State graduate who currently works as a System Engineer at the Naval Air Warfare Center in China Lake, California. In this role, he is responsible for designing and testing advanced weapons systems. Ritter credits Weber State with giving him the technical skills and problem-solving abilities he needed to excel in his career.

These are just a few examples of the many successful system engineering graduates from Weber State University.

***Quantitative/qualitative output and/or outcome (accomplished or expected):***

- Number of students participating: 60

- Number of students who completed: 24

***Objective/task title: Task 1.4***

***Objective/task description:***Conduct outreach for an Advanced Composite Materials and Structures Center which would be a joint venture to be developed at Utah State University (USU) in association with Weber State University (WSU), to provide a Master of Science degree that is geared towards practicing engineers and will be taught through a hybrid model approach.

***Narrative of achievements:***

Objective: UAMMI will coordinate support for the new Composites Degree Program to reinstate State Funding.

Task 1.4 Advanced Composite Material and Structures Center in collaboration with Utah State University (USU) and Weber State University (WSU) and develop a master’s degree program and training resources for practicing engineers with state-of-the-art laboratory facilities.

America Makes will be collaborating to leverage best practices from the EWD library and engagement of members where applicable.

America Makes organized strategic meetings with Utah State to start moving forward on new collaboration and ideas:

- America Makes offered to leverage the Additive Edge program to help build out additive manufacturing pathways in local feeder school districts to inspire the talent pipeline.

- America Makes offered to facilitate the collaboration with RCBI to establish an additive manufacturing apprenticeship program within Utah State.

***Quantitative/qualitative output and/or outcome (accomplished or expected):***

***Task Complete***

***Objective/task title: Task 1.5***

***Objective/task description:***Focus on involvement of women and girls, by building programs that amplify and create talent within the STEM fields to support more females from kindergarten through high school, advanced degree program, to the boardroom.

***Narrative of achievements:***

**Davis Tech:**

Davis Technical College, as part of the UDMC 1.5 v2.0 contract with UAMMI, will be holding three welding camps over the next three years. We are currently in the planning phase for the 2023 camp. It will be held in the first week of June and will follow the same itinerary as last June. Registration will open before the end of March, with a maximum of 18 spots available. Camp attendees will work with our Welding Technology instructors to learn different processes, metal tolerances, and design techniques to create beautiful and useful pieces. They will work on individual projects throughout the four-day camp. We are working with Lincoln Electric and ORE Designs about participating in this year’s camp as they have in the past.

**Catalyst Campus**

This event was a collaboration between Utah Advanced Materials and Manufacturing Industry (UAMMI) and Catalyst Campus for Technology and Innovation (CCTI), inviting women who are leaders supporting Aerospace and Defense. In this capacity, we invited panelists to speak on UAMMI, CCTI, Weber State University, as well as some of our local Hill Air Force Base leaders on how to create a strong ecosystem of collaboration and innovation as it pertains to women’s leadership. There were facilitated discussions around the room on what leaders were doing to be “innovative” and what the word “innovation” means to them. We had an opportunity to host the panel for a Q&A to further facilitate the dialogue on mentorship and how to handle crucial conversations as well as how to bring teams together during some of the trials we are facing with smaller teams and talent acquisitions.

***Quantitative/qualitative output and/or outcome (accomplished or expected):***

See Attachment\_1 Task 1.5 Catalyst Campus Photos.

Number of participants per event: 40

Number of Events held this quarter: 1

Number of Industry Partners per event: 8

Number of Marketing & Communications Tools: 2

**USU 4-H:**

UDMC partners continued the work on Engineer Everything Curriculum, including four new curriculum pieces. As in the past, we have tested the curriculum in both afterschool and traditional 4-H clubs in Salt Lake, Weber and Davis counties. This has included the participation of 386 girls in Salt Lake and Weber counties. We have also continued to focus on family activities to help parents develop stronger STEM Identities so that they can better support youth in STEM education. One major development over the last few months is the sharing of our Engineer Everything Curriculum and the corresponding Innovation Station Maker kits with the Utah STEM Action Center. In turn, the STEM Action Center applied for and received a grant that integrates our program into family outreach throughout communities in Northern Utah. While this project does not utilize funds from this grant, our work on this grant was the catalyst to receive funding to greatly expand these efforts.

We also held three Young Problem Solvers camps in different low-income areas in Salt Lake county, following similar work last year. While the work is focused on northern Utah, we are receiving requests for curriculum from afterschool sites throughout Utah, and from sites throughout the nation. One of the programs receiving very high interest is “Storybook Code”, a series of curricula that we have created for introducing engineering and coding to the very young by tying STEM concepts to traditional storybooks. For example, “The Monster at the End of This Book” illustrates problem-solving and iterations; “If You Give a Mouse a Cookie” is a great illustration of If/Then Statements.

While we do not have Try Team Camps running this quarter, our near-peer mentors have met every Thursday for the last three months to prepare and develop our curriculum for the training which will take place on March 17-18th. They have utilized an “Alice in Wonderland” theme to introduce various STEM topics that can easily be taught by youth, to youth.

Another highlight this quarter is the development of an “Engineer Your Garden” class. We are continually working to find ways to entice underserved youth to become involved in engineering and manufacturing. Our latest venture is the use of a garden club to stir engineering interest. This club is working to develop a more “portable garden” that can be moved to meet sunlight needs and to access the limited water available at an afterschool site. Youth in this club developed a design for a garden box on wheels and then prepared a presentation for a school administrator to demonstrate their design and request permission to build the box and place it on campus. They created a small-scale model of the design. They are now in the process of cutting and manufacturing the box. They have also started seedlings indoors for planting once the box is finished and the weather is optimal. Once completed, they will program a Farm Bot machine to help monitor and water the crops. This has been a great experience for the youth in learning how manufacturing applies to different community needs and interests.

We continue our work with the STEM Spots, and have placed eight new STEM spots in Northern Utah. We continue to place STEM learning materials in these locations for families to readily access. We now have 16 STEM Spots in communities throughout Northern Utah.

***Quantitative/qualitative output and/or outcome (accomplished or expected):***

See Attachment\_2 Task 1.5 USU 4H Photos.

The number of girls that were introduced to STEM programs in each of the four programs outlined.

Engineer Everything 341,

Young Problem Solvers 211,

TRY Teams: n/a, however, large try team training event will take place on the March 17-18th 2023

STEM Spots 480

Number of Young Problem Solvers Camps 3 (in form of afterschool clubs: Number of Camps - 3

Number of Young Problem Solvers Camp participates 124: Number of Participants - 211

Engineering Everything Kits – Number of Kits created 534: Number of Kits - 534

TRY Teams: Number of Mentors - 10

Number of teachers implementing PBL within manufacturing - 36

Results from surveying participants and quantifying the results of the program: 86% girls interested in pursuing STEM/manufacturing

Number of Toolkits/Playbooks/Roadmaps: 1

Number of Webinars/Workshops held: 4

Number of Marketing & Communications Tools: 2

**Trego Engineering:**

There are two goals for this subcontract:

The first goal is for Dr. Angela Trego to deliver a 2+1 workshop format for STEM and CTE faculty training, teaching skills in the areas of unconscious bias, micro-messaging and gamification principles. Engaged learning principles will be utilized which faculty can immediately use upon completion of the first workshop to increase the enrollment of women and underrepresented populations.

The second goal is to increase enrollment of non-traditional participants, especially females in STEM courses and ultimately STEM careers through training high school counselors. Dr. Angela Trego was identified to deliver a workshop for high school counselors teaching skills in the areas of unconscious bias and micro-messaging as well as informing counselors on the various career options for STEM students.

CTE Faculty Training:

**Task 1: Provide 2 trainings for up to 25 attendees each**

Provo School District has 11 faculty members who attended the first of three sessions on 19 January 2023. Subsequent sessions will occur in March and finish in April.

Canyons School District has scheduled training to begin on 7 March with subsequent sessions in April and finishing in May.

This task is on time and on budget.

STEM Counselor Training:

See DMSCP Deliverable 2023-01 Trego. This task was completed on time and on budget.

***Quantitative/qualitative output and/or outcome (accomplished or expected):***

Number of STEM/CTE teachers trained: 11 in progress

Number of STEM/CTE counselors trained: 23

Does your project track diversity and inclusion: yes

**America Makes (UMDC DoD Institute partner):**

Objective: Focus on the involvement of women and girls, by supporting and building programs that amplify and create talent within the STEM fields.

America Makes continues to pursue potential collaboration opportunities to deploy, Project Materials, Middle School Recruitment Toolkit, Middle School and High School/Adult Microlearning Modules, Micro Badges, Girl Scout Badges, High School Additive Edge Program, Scholarships available for self-paced AM eLearning courses. Continued offer of engagement of America Makes Members to provide Mentoring, Workforce, Education, Training, and Outreach.

America Makes has completed collaborative efforts with the programs selected to receive funding through UDMC as listed below:

- Mother Coders/Tech Moms – America Makes continues their support of Weber State in upcoming grant proposals to deploy our Additive Edge program to the Tech Moms future cohorts. While not initially chosen for grant funding, work continues to look for opportunities to work with the team at Weber State and Tech Moms.

- Code Camp for Girls – America Makes offered to leverage members for involvement.

- Welding Camps – America Makes participated in planning meetings for the summer girls welding camp and offered to coordinate a tech talk on Metal Additive to highlight the parallels between welding and metal additive manufacturing. America Makes’ Additive Edge program was offered as a potential camp activity.

- Career Awareness Course Development – the program will be using videos to highlight women who work in manufacturing (as technicians and engineers). America Makes offered potential video/tech talk from member Fitz Frames and the Additive Edge project.

- Women’s Mentoring and Networking – America Makes offered to provide a tech talk on Additive Manufacturing and will engage members for mentoring opportunities.

- STEM Programs for Girls - 4H programs – America Makes leveraging the middle school modules.

During Q2 2023, The Girl Scouts of Utah had their first troop earn the America Makes Additive Manufacturing patch. The first cohort saw approximately 20 scouts complete the program, learning the additive manufacturing process and creating their own 3d prints. For initial patch distribution, the team fostered a partnership with the Girl Scouts of Northeast Ohio (GSNEO) to distribute GSNEO patches. The team will continue supporting the expansion of the America Makes Additive Manufacturing Patch to additional troops in collaboration with UAMMI and the Utah STEM Action Center.

To support this activity, America Makes promoted the Utah Girl Scouts to collaborate on our America Makes’ partnership with Ultimaker, which pairs 3D printers with middle and high schools, as well as community organizations and non-profits deploying our America Makes’ educational resources across the country with the goal to grow awareness, inspiration, and entrepreneurship opportunities for 3D printing technology among young women.

Based on industry-recognized credentials, the America Makes Additive MFG Patch is aligned to many Girl Scout Badges, including STEM and others where AM can be applied and integrated. Badges are a key component of the Girl Scout Leadership Experience, which focuses on four content pillars of Outdoors, Life Skills, Entrepreneurship, and STEM, with the goal of fostering courage, confidence, and character in girls to prepare them for a lifetime of leadership. America Makes provided a Playbook for best practices on integrating AM into Girl Scout programming, GSLearn modules, and customized curriculum created to earn the patch, including fashion and game board design. To supplement the learning materials that accompany the America Makes Girl Scout patch, the Utah Girl Scouts and supporting partners have been provided with access to America Makes AMNation Pipeline Portal and our Middle School Microlearning Modules, as shown in Figure 4 in Attachment\_3 Task 1.5. These 11 microlearning modules feature a series of short interactive lessons to introduce students to basic elements of Additive Manufacturing (AM). Each module demonstrates a unique step in the AM process, beginning with an introduction to additive manufacturing, continuing through CAD software instruction, basic printer operation, troubleshooting, and cybersecurity. To further enhance the scouting experience, incorporate boots on the ground, and facilitate mentoring opportunities, America Makes continues to support a collaboration with the Women Tech Council, Girls Scouts of Utah, America Makes, and UAMMI personnel. America Makes will continue to work to identify potential opportunities for collaboration to support the Utah Girl Scouts in their deployment of the patch activities, either through equipment or industry partner support.

***Quantitative/qualitative output and/or outcome (accomplished or expected):***

As this task includes results from multiple UDMC partners, our quantitative results are included in the narrative for each partner above this section.

***Objective/task title: Task 1.6 STEM and K-8th Grade***

***Objective/task description:***Educate and inform kindergarten through eighth-grade students about the manufacturing industry, before they reach high school.

***Narrative of achievements:***

***STEM Action Center***

The STEM Action Center maintained check out, delivery and pick up of the Additive Manufacturing Curriculum Kits as part of our mobile curriculum program, STEM in Motion. These Additive Manufacturing kits are available for 2-week checkouts and have been reserved for every check out period for the entire school year. Additionally, the STEM Action Center facilitated a 3D Printing/Additive Manufacturing curriculum with Girl Scouts of Utah using America Makes’ Girl Scout Patch program. 20 Girl Scouts were in attendance spanning seven different troops.

The STEM Action Center’s mobile Additive Manufacturing curriculum has been checked out every two-week registration slot since the start of the school year. Approximately 800 students have been impacted across five schools. We anticipate 1,500 students will be impacted by the end of the school year.

Additionally, the STEM Action Center in partnership with Girl Scouts of Utah and America launched the Girl Scouts 3D Printing/Additive Manufacturing Patch program in Utah. The STEM Action Center facilitated a 2-hour lesson to get troops started. 20 girls (ages 9 – 11) used TinkerCAD to design pieces of jewelry. The 20 girls made up seven different troops.

Track number of Students that Participated: 820

Track number of Students that Completed: 820

Track number of courses/programs updated: Girl Scouts AM Patch launched

Number of Webinars/Workshops held: Anticipated: 4 workshops with girl scout troops

***America Makes***

Objective: Results of a survey in June 2020 found that 73% of high school students do not consider manufacturing as a career. This project’s objective is to educate and inform K – 8th about the manufacturing industry before they reach high school.

STEM Action Center and America Makes implemented new modules for additive manufacturing Additive Manufacturing/3D Printing activities-kit. Digital badging topic area outline and the AM Process Graphic was provided to the STEM Action Center to support building out the 3D printing kits. America Makes continues to support the STEM Action Center through access to our America Makes AMNation Pipeline Portal and the educational outreach assets hosted on the portal, including the Middle School Microlearning modules for Middle School Students, and Additive Edge – a high school awareness and inspiration program. In addition to STEM Action Center personnel being provided with access to America Makes AMNation Pipeline Portal and the Middle School Microlearning Modules to support their efforts in assisting deployment of the America Makes Girl Scout patch, America Makes is continuing its efforts to align printing equipment assets to align with increasing female inclusion in STEM curriculum through our Ultimaker partnership program.

During Q2, America Makes is collaborating with STEM Action Center on the deployment of newly created High School/Adult Microlearning modules. These eight microlearning modules feature a series of short interactive lessons to introduce students to the basic elements of additive manufacturing (AM). Each module demonstrates a unique step in the AM process, beginning with an introduction to additive manufacturing, continuing through CAD software instruction, basic printer operation, and troubleshooting. As we continue to create new content and modules, we will continue offering our educational assets to further technology and career exploration. All of our education assets can be found at America Makes’ AMNation Pipeline Portal (<https://amnation.americamakes.us/>).

Working Group, American Makes, and My Tech High develop curriculum, Additive Manufacturing/3D Printing K-8 Modules, for K-8th grade. America Makes continues to work towards collaboration with My Tech High to leverage the America Makes Middle School Recruitment Toolkit and Additive Edge – a high school awareness and inspiration program.

America Makes continues to work with UAMMI and the Utah Manufacturing Association to strengthen our outreach in the region to facilitate additional scaling of our educational assets during the 2023-24 school year.

America Makes Synergy 2.0-4.0

Supply Chain:

Objective: Continue development of the CONNEX supply chain tool to improve resilience, reshoring manufacturing, and creation of composites center of excellence.

Research:

Objective: Research programs better aligned to support the defense industry.

Small Business

Objective: Support small businesses, the backbone of the defense manufacturing industry, by enhancing supply chain opportunities and providing innovation and rapid development of new products.

America Makes attended UDMC Supply Chain Working Group meetings and will be engaging as a committee member to leverage both active and past projects as well as engage stakeholders on a national scale. America Makes will assist in identifying correlations and alignments to national defense strategies where applicable. The America Makes information technology team reviewed and assessed the CONNEX tool for alignment to the America Makes technology roadmap prior to the final release.

Additional Information

In support of Talent Ready Apprenticeship Connections (TRAC), the project team is exploring the opportunity of collaborating to offer our first-ever industry-validated Additive Manufacturing Apprenticeship program, created with the Department of Labor through an America Makes project. Our partners are available to help implement world-class training that combines hands-on, work-based learning with related classroom instruction using the highest industry standards to enhance companies ‘performance and competitiveness. In addition, America Makes is exploring possibilities for deploying industry-recognized credentials with UAMMI and UMA.

***My Tech High:***

This program was prepared under contract with the Utah Advanced Materials and Manufacturing Initiative with financial support from the Office of Local Defense Community Collaboration, Department of Defense.

UAMMI and My Tech High held several meetings with various stakeholders, including:

- Course Developers

- America Makes

- Educators

- UAMMI leadership

- UDMC STEM Action Center

As part of this quarter’s meetings, the following items were discussed/completed:

- Beta-tested the course with students through the 2022-23 school year.

- Supported students as they worked through the course.

- Made course edits as necessary to make fixes and updates, including adding AI text-to-speech for accessibility.

- Completed 1st semester and are working through 2nd semester of beta testing.

- Worked with Scott Brown of Brainmaker Games to plan the Pitch Event for the end of the school year.

[Here’s a link to the course materials](https://docs.google.com/spreadsheets/d/1G_-DS72PgXPPSyLNJY4yD-1nWYM2tgp9KBdCl0VONCU/edit?usp=sharing).

***Pillar 2: Supply Chain***

***Objective/task title: Task 2.0***

***Objective/task description:*** The development of CONNEX for the UDMC will be expanded to allow for increased collaboration between academic institutions, Hill Air Force Base (HAFB), and the defense industrial base by furthering workforce initiatives and research and development (R&D), as well as the defense industrial base by increasing the number of organizations connected in the platform.

***Narrative of achievements:***

**Growth update for CONNEX:**

Much of CONNEX Marketplace’s growth has been in the area of adding participants. There have been new participants onboarded in Utah as well as in other states with a focused CONNEX implementation. Three new states (AL, KY & MA) have been added as sponsoring partnerships since the last report, bringing our total partnerships to fifteen, well on our way to seeing CONNEX Marketplace becoming the chosen national supply chain solution for our country. This movement towards national adoption with boots-on-the-ground partnerships in multiple states will make the CM environment a richer and deeper experience for all involved, including organizations from Utah.

\*Work done and New functionality added to CONNEX: By now, the majority of the development work in the CONNEX Marketplace application has been completed under the UDMC Project. However, since the last quarterly report, the following application development work has been done in relation to the UDMC pillars:

- Workforce Feature: In the March 1, 2023 release, “Surplus” Exchange Center types are listings in CONNEX Marketplace that advertise excess materials or equipment that manufacturers are interested in selling or donating. Workforce organizations can now participate in Surplus Exchange Center listings by responding to and expressing interest in Surplus items.

- Workforce Tutorial: Two video tutorials have been produced to assist Workforce organizations onboard to CONNEX Marketplace. They are:

- “How to create an Account”: <https://youtu.be/-pOr-llX2NQ>

- “Updating your Profile as a Workforce Organization”: <https://youtu.be/0QIdMWG-OmM>

- Research & Development: In the March 1, 2023 release, R&D organizations can now participate in Surplus Exchange Center listings by responding to and expressing interest in Surplus items. This is in addition to other collaborative Exchange Center type of listings that revolve around manufacturing research needs and grants.

- Research & Development Tutorial: One video tutorial has been produced to assist R&D organizations onboard to CONNEX Marketplace. A second tutorial is planned but will be produced after a new Research feature is released in May 2023 so that the tutorial can include it in the screen video capture. They are:

- “How to create an Account”: <https://youtu.be/-pOr-llX2NQ>

- “Updating your Profile as a Research Organization”: (pending)

Bug Fixes: A variety of minor bugs were also identified and fixed in the March 1, 2023 release.

Collective Team Collaboration: A Workforce announcement meeting was hosted by UAMMI and supported by i5 Services on Mon Jan 9, 2023. A selection of stakeholders were present and updates from efforts under the UDMC contract were provided.

Additionally, i5 Services and UAMMI met later on the same day for a follow-up on the next steps for rolling out the Workforce module. The following action items were determined as next steps:

- The partnerships that have focused on bringing Workforce capabilities to CONNEX Marketplace needed a more focused definition of how to accurately define what a Workforce organization is so that these rules can be applied consistently when organizations apply for access and administrators vet and approve or deny the applications. This definition is shared below.

- On Feb 21, 2023, an email announcement was made promoting the Workforce module and inviting workforce organizations to join or renew their commitment to engaging in CONNEX Marketplace. To date, it has not received much traction. For this reason, an information webinar has been scheduled for April 11, 2023.

A Research & Development workshop was held by UAMMI (Tulinda, Guy, KC, Angela) and i5 Services (Alan, Roger) on Mon Feb 13, 2023. In that workshop, it was decided that we’d produce tutorial videos similar to what we’ve done for Workforce as well as add the Key Word feature for researchers as described in the Narrative section below.

**Explanation of Metrics in the above table:**

**2.0 Number of additions to CONNEX this past quarter is 8. The number came up by:**

-This quarter, 3 new defense manufacturers were added bringing the total to 100.

-Small Disadvantaged Businesses - 1 new addition bringing the total to 10.

-Small Disadvantaged businesses 8a - 1 new addition bringing the total to 2.

-HUBZone - no new additions keeping the total of 2.

-Veteran-Owned Small Business - 1 new addition bringing the total to 10.

-Service-disabled Veteran-owned Small Business - no new additions keeping the total to 5.

-Economically Disadvantaged Women-Owned Small Business - 1 new addition bringing the total to 5.

-Women-Owned Small Businesses - 1 new addition bringing the total to 36.

Added together, the new count to CONNEX is 6 this past quarter.

These numbers were pulled by doing a query on organizations with an SBA program *attached.*

***Quantitative/qualitative output and/or outcome (accomplished or expected):***

*Number of new functionalities added to CONNEX: 2*

*Number of Companies identified as Defense Manufacturers: 100*

*Number of New Participants added to CONNEX: 8*

*Number of workforce programs included in CONNEX: 54*

*Number of research projects included in CONNEX: 67*

*Number of Companies identified as Veteran Small Business: 15*

***Objective/task title: Task 2.1***

***Objective/task description:***Following awards by the State of Utah under the Manufacturing Management Grant Program (MMGP), which was an outgrowth of the UDMC’s previous reports on reshoring and recommendations for a program like MMGP, the Governor’s Office of Economic Opportunity has made UAMMI, under its UDMC role, available to assist awardees with reporting of progress and metrics to the State and to continue to monitor the national landscape regarding reshoring and supply chain initiatives. The purpose of the effort is not only to ensure compliance and progress with awardees, but to provide background information that may be used to support the renewal and expansion of the program in 2023.

***Narrative of achievements so far:***

For 2022 awardees, UAMMI has engaged with eleven firms on progress and metrics reporting. On January 21, 2023, provided its status report to the Governor’s Office of Economic Opportunity (GOEO) with in-depth looks at four awardees that have made the most progress on their grant projects thus far. UAMMI’s findings were used by GOEO in its testimony to the Utah legislature in support of the FY2024 appropriation for the MMGP. Also in January, UAMMI assisted the Utah-MEP Alliance with outreach to the manufacturing community with regard to the renewal of MMGP. These efforts resulted in the successful appropriation of $10 million for the 2023 MMGP. Furthermore, in January and February, had significant direct communication with five cluster members regarding the likely timing and requirements for the 2023 MMGP applications.

***Quantitative/qualitative output and/or outcome (accomplished or expected):***

Prepared status report to GOEO with monthly updates on 2022 grantees expected over the next two quarters. It is expected that UAMMI’s continued engagement with 2022 award recipients will continue to enhance the quality of information tracked and successful project results for these recipients. As MMGP has funded for 2023, UAMMI expects that it will be working closely with many applicants and that the result of these efforts will ensure that, as in 2022, several Utah manufacturers in the Aerospace and Defense fields (along with others) will be awarded grants that help these businesses enhance supply chain reliability through automation and reduce the reliance on overseas competitors.

***Objective/task title: Task 2.2***

***Objective/task description:***With the onset of new USAF Agility Prime programs of unmanned aerial systems (UAS); electric vertical take-off and lift (eVTOL); Advanced Air Mobility (AAM); ORBS for logistics, rescue, and troop movement and swarm warfare, lower cost and higher speed aircraft, new materials, and manufacturing methods are urgently needed. The UDMC will support small business and research institutions' Small Business Technology Transfer (STTR) Open Topic proposals for Agility Prime.

***Narrative of achievements:*** The UDMC delivered the investable plan for a Utah Center of Excellence for testing and qualifying advanced materials in Q1. This Task is closed.

***Quantitative/qualitative output and/or outcome (accomplished or expected):*** The UDMC delivered the investable plan for a Utah Center of Excellence for testing and qualifying advanced materials.

***Pillar 3: Research***

***Objective/task title: Task 3.0***

***Objective/task description:*** Increase collaboration between academic institutions, Hill AFB, and the defense industrial base by furthering R&D initiatives.

***Narrative of achievements:*** The 2023 Defense Research Symposium is scheduled for April 5th and features the following speakers:

**Air Force Research Laboratory(AFRL/RS)**

Mr. Anthony "AT" Thomas

**DoD APEX PIA Division/Program Manager & Academia & Small Business Outreach**

Ms. Erin Holden & Dr. Kate Gilpin

**Air Force Office of Scientific Research (AFOSR/RT & RTC)**

Ms. Katie Wisecarver & Capt Renee Allen

**AFWERX, Strategic Engagement Lead**

Ms. Helena Krusec

**Idaho National Laboratory**

Mr. Anthony Nickens

**National Energy Technology Laboratory for Department of Energy (NETL/DOE)**

Dr. David Alman

(Carry over narrative from prior quarterly report for continuity) As of August 2022, the R&D, Workforce, and Advanced Manufacturing functionality from CONNEX UT has now been successfully ported over and launched within CONNEX Marketplace. We are now resuming our user group workshops in all 3 areas.

Planned feature update to Research & Development: In addition to the current data available in the researcher’s profile, we will add the ability for the researcher to provide customized Key Words that describe their areas of interest. This will complement the existing “Areas of Interest” free-form field that is available to them. These Key Words (along with currently available profile data) will be indexed and searchable. This is anticipated for the update that is scheduled for release on May 10, 2023.

New Industries categories were also suggested as additions to the platform. Specifically: “Rare Earth Elements” & “Batteries”. These types of additions to CONNEX Marketplace undergo a review by subject matter experts. That review is underway.

Workforce Definition: Organizations that identify by any of the following will be considered as a qualifying participant in CONNEX Marketplace:

ACADEMIC/EDUCATION Organizations

- STEM

- Certificate training programs

- Degree programs

- Internships

- Apprenticeships

- Incumbent worker training

- Between jobs transitioning

- Displaced workforce training/skills updating & upgrading

SUPPORTING SERVICES Organizations

- Recruiting companies

- Relocation services

- Employee screening

- HR programs

- Professional Employer Organization (PEO)

- Workers Compensation Insurance

DIVERSITY EQUITY INCLUSION & BELONGING Organizations

- Accessibility programs

- DEIB outreach

- Veteran outreach

- Formerly incarcerated individuals

- New immigrants to the region

FINANCIAL ASSISTANCE Organizations (For Companies to hire workers)

- Custom Fit

- Short Term Intensive Training (STIT) Funds

- Department of Workforce Services (DWS)

Progress with the Additive Manufacturing (AM) module has stalled but collectively we are not concerned because of the direction and effort we are putting on Workforce and R&D. Next steps with AM are to work with Josh Cramer, America Makes.

Workshops:

Planned upcoming Workshops:

Workforce:

- April 11, 2023 (Info Session for Workforce representatives)

R&D and A.M.:

- TBD

***Quantitative/qualitative output and/or outcome (accomplished or expected):***

-Number of workforce programs: 54, the same as Q1. Workforce was launched in the new CONNEX Marketplace platform in August 2022.

- Research opportunities in CONNEX: 67

- Registered for April 5th Symposium: 145

***Objective/task title: Task 3.1***

***Objective/task description:***Research related to composites.

***Narrative of achievements:***This task is closed with the Business Plan final deliverable for the Utah Aerospace Advanced Manufacturing Center, provided by the UDMC in February 2022.

***Quantitative/qualitative output and/or outcome (accomplished or expected):***With the delivery of this business plan, this task is now complete.

***Objective/task title: Task 3.2***

***Objective/task description:*** Research related to converting coal to carbon fiber (C2CF).

***Narrative of achievements:***

We completed all the work on this task and provided our final report.

***Pillar 4: Small Business and Incubators***

***Objective/task title: Task 4.0***

***Objective/task description:***Identify veteran owned defense manufacturing businesses and utilize existing outreach initiatives to increase awareness and access for veterans with a focus on veteran owned businesses in the defense manufacturing industry.

***Narrative of achievements:***

-Veteran-Owned Small Business - 1 new addition bringing the total to ten.

***Objective/task title: Task 4.1***

***Objective/task description:***Outreach of existing programs for entrepreneurs and small businesses through the Utah Industry and Innovation Center under GOED. This will be accomplished by utilizing existing resources within the state, such as the SBIR/STTR, and working with UDMC to identify small businesses eligible for these programs.

***Narrative of achievements:***

Three virtual SBIR 101 trainings were held during the quarter, one in-person 101 with the

University of Utah, one hybrid HHS workshop with in-person and virtual options, and two ½ day

virtual trainings with a national expert on Phase II proposals and cost proposals and government

accounting.

***Quantitative/ qualitative output and/or outcome (accomplished or expected):***

Number of Training Workshops 7

Number of Attendees 147

Number of STTRs/SBIRs submitted 11 (5 defense-related)

Five small businesses under the UDMC umbrella received services from Center staff to submit

five SBIR/STTR proposals during the quarter. This included three Phase I and two Phase II

proposals.

**PTAC Report**

Events Sponsored/Participated in: 26

Highlights:

- Strategic Alternate Sourcing Program Office (SASPO): 75 attendees

- Bureau of Reclamation: 30 attendees

- U.S. Army Corps of Engineers Construction Mgmt Trng: 20 attendees

- GSA Introduction/How to Market: 14 attendees

- 8(a)/SDB Counseling Hours: 13

- Women-Owned Businesses Counseling Hours: 263

- Contract Awards: $172,711,367

***Objective/task title: Task 4.2***

***Objective/task description:*** Leverage UAMMI’s contract with Small Business Administration (SBA) for Regional Innovation Cluster (RIC) and Rapid Advanced Materials Program (RAMP) programs to assist in expanding and growing the defense industrial supply chain.

***Narrative of achievements:***

As shown in previous reports, RAMP is a key program for our RIC efforts. Through this program, our team can spend time with key Cluster Members and provide one on one training and mentoring. This program continues to provide the RIC cluster with significant accomplishments. The UDMC team continues to mentor RAMP participants and previous graduates.

***Quantitative/qualitative output and/or outcome (accomplished or expected):*** Through our RIC engagement we continue to meet our goal of providing individual counseling/training to at least 15 small businesses per quarter.

**UDMC meetings not detailed above:**

1/9/2023 - AMCC Workforce with UAMMI (35 Attendees)

1/9/2023 - DEIBA Roundtable (28 Attendees)

1/10/2023 - Board Meeting Hybrid (42 Attendees)

1/31/2023 - Women's Leadership Seminar (28 Attendees)

2/09/2023 - Price UAMMI Day (11 Attendees)

2/23/2023 - Battery & Critical Minerals Consortium (37 Attendees)