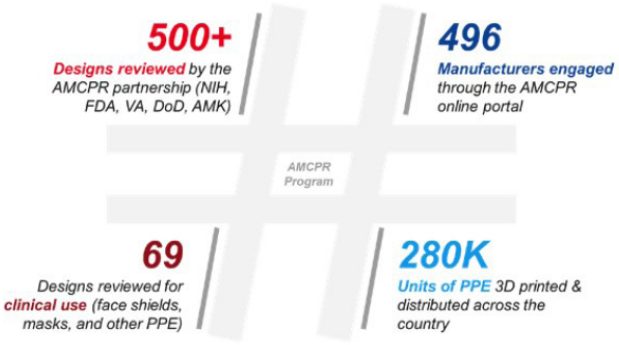
Advancing U.S. manufacturing supply chain resiliency and preparing the nation for unknown and future crises

Response infrastructure using AM bridges supply chain gaps and supports warfighter readiness in times of crisis.

Scenario Execution Parts



AMCPR Program by the Numbers

PROBLEM

Traditional supply sources are fragile and cause crisis response delays due to shortages, longer lead times, and lack of flexibility. Disruptions in lean and global supply chains have led to gaps in critical supplies needed during times of crises. Additionally, no level of advanced manufacturing can occur without the essential contribution of the American worker. The supply chain would greatly benefit from an integrated pathway starting with a high level of awareness related to enhanced agility during times of national crisis, as well as during times of normal operation.

OBJECTIVE

The Advanced Manufacturing Crisis Production Response (AMCPR) addresses the need to provide a means to rapidly respond to national, regional, and local supply chain shortages in times of crisis. The enduring strategic infrastructure includes workforce readiness, regulatory awareness, and access to supply chain and vetted designs. The infrastructure shall help prepare the U.S. for future crises and enhance overall national economic competitiveness and security for current and future, unknown crises.

TECHNICAL APPROACH

The National Center for Defense Manufacturing and Machining (NCDMM)/America Makes, with partners including the Office of the Secretary of Defense (OSD), Deloitte Consulting, LLP, and the AMNOW Project Team, addressed this challenge by focusing on extending the America Makes mission to play a critical role in the preparedness and response to any potential crises. Through their knowledge and expertise, project partners demonstrated the strength of additive manufacturing (AM) for crisis response; connected needs with capabilities to address supply chain gaps, and designers with regulatory reviewers to ensure safety; hosted a publicly accessible model repository and online portal – the AMCPR Exchange; enabled integrated design, production, and distribution processes; and mobilized the U.S. AM community through a crisis response playbook and strategic roadmap.

In addition, the AMCPR program practiced need fulfillment through crisis scenario execution using the AMCPR Exchange.

This project aligns to:

Crisis Response

Supply Chain Management

PROJECT END DATE
January 2022

Providing access to essential manufacturing resources.

SUCCESS STORY

ACCOMPLISHMENTS

The acceleration of crisis response effectiveness has been possible due to improved network engagement, communications, and regulatory agility. The AMCPR Exchange established a centralized, digital authority to mobilize domestic suppliers, and provide access to vetted, reviewed, and accepted designs to improve U.S. AM response capability to future crises.

The research and design of a strategic regional roadmap was developed to deploy the AMCPR in specific geographic regions, and to aid in the understanding of talent gaps and opportunities of producers and end users. Collaborating to build workforce pipelines and pathways, and prepare the workers through both re-skilling and up-skilling has been made possible via access to blended learning content and certification training programs.

The expansion of the AMCPR response network (suppliers and designers) across the AM ecosystem, through continued crisis scenario testing, has ensured preparedness for the next crisis. The AMCPR playbook is the go-to resource for repeatable, scalable processes during crisis response.

Additional deliverables included:

- Built multi-agency cooperative with VA, FDA, NIH
- Identified 400 manufactures across 43 states through AM ecosystem
- Contributed to 52M+ pieces of PPE produced by AM community
- 360+ surveys to needs requesters and suppliers
- Identified risk thresholds for new product development and usage through regulatory guidance
- Increased awareness of benefits and applications of AM for healthcare and other key industries
- Created workforce pipelines and pathways to educate, re-skill and up-skill more than 1,000 individuals

SCALE BEYOND SCOPE

The AMCPR program provided a means to rapidly respond to national, regional, and local supply chain shortages during the COVID-19 pandemic. The supply chain shortfalls experienced during the COVID-19 pandemic spurred interest in advanced manufacturing, particularly additive manufacturing. Through the AMCPR Program, America Makes has leveraged interest as a springboard to continue to advance the state-of-the-art additive technology and expand current AMCPR capabilities, rapidly creating and making available more crisis products. As the AMCPR expands its capabilities and attracts a broader set of ecosystem stakeholders, the U.S. enhances its resiliency and competitiveness.

FUNDING

$4.7M total project budget

PROJECT PARTICIPANTS

Project Principal:
National Center for Defense Manufacturing and Machining (NCDMM)/America Makes

Other Project Participants:
Deloitte Consulting, LLP
AMNOW Project Team

Public Participants:
Office of the Secretary of Defense (OSD)

About NCDMM

NCDMM delivers innovative and collaborative manufacturing solutions that enhance our nation's workforce and economic competitiveness. NCDMM has extensive knowledge and depth in manufacturing areas—both commercial and defense—continually innovate, improve, and advance manufacturing technologies and methodologies. Our experienced team specializes in identifying the needs, players, technologies, and processes to attain optimal solutions for our customers. We connect the dots. That's the NCDMM methodology. NCDMM also manages America Makes and the V4 Institute and is the cornerstone of the Manufacturing Technology Deployment Group, Inc. (MTDG). To learn more, visit ncdmm.org.