

# 2022 Additive Manufacturing Workshop

## Assessing Additive Manufacturing Crises Response

Outbrief to JAMWG  
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# Assessing Additive Manufacturing Crises Response Objectives & Planned Deliverables

1. *Scenarios and Use Cases*
2. *Questions that would be answered by an assessment*
3. *A proposal for*
  - a. *Type of assessment (e.g., wargame, table-top exercise, chalk talk, demonstration, exercise, or other)*
  - b. *Realistic timeframe for when an assessment could be conducted (e.g., could an exercise be held in FY23?)*

# Assessing Additive Manufacturing Crises Response

## Day 1: Accomplishments and Deliverables

### 1. Created a list of **Lessons Learned** from Covid

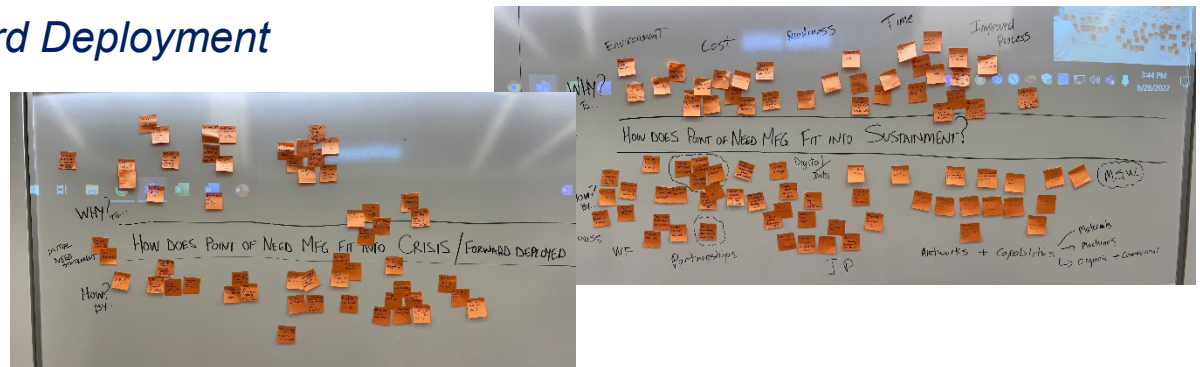
Engage DLA	Regulatory + Rules of Engagement (Authority,; Knowledge; Policy)	OIB Driven by "funded requirements"	Mechanisms to interact and transfer resources (OIB and Other)
Redundant & Inadequate Risk Management Framework	Interagency disconnect	Understanding demand signals and requirements	Importance and value of established partnerships
	Importance of Digital Thread	Perceived barriers to IP rights	

### 2. Created a list of **Needs** for Crises Response

- |   |            |                                |
|---|------------|--------------------------------|
| 1. Approved business model  | 2. Funding | 3. Team to Wargame and Execute |
| <ul style="list-style-type: none"> <li>• Capability/capacity</li> <li>• Approval authority</li> <li>• incentives</li> </ul> |            |                                |

### 3. Evaluated how **Point of Need Manufacturing** fits into

- Crises/Forward Deployment
- Sustainment



# Assessing Additive Manufacturing Crises Response

## Day 2: Accomplishments and Deliverables

- Reviewed Advanced Manufacturing Crisis Production Response (AMCPR) Playbook
- *Assessed crisis landscape: Regulations / Governance needs imbedded in each criteria*

<p><b>Process Complexity</b></p> <ul style="list-style-type: none"> <li>✓ <i>Anticipate what those needs are, and prepare for it</i></li> <li>✓ <i>Not clear on who's in charge (state vs federal)</i></li> <li>✓ <i>Response speed</i></li> <li>✓ <i>No overarching process (may not be singular process pending types of scenario)</i> <ul style="list-style-type: none"> <li>○ <i>Process for crises response only?</i></li> <li>○ <i>Standard process and then ready to activate in normalcy or crises?</i></li> </ul> </li> </ul>	<p><b>Ecosystem Complexity</b></p> <ul style="list-style-type: none"> <li>✓ <i>Define who makes up the ecosystem, build into criteria and scenario, what organizations need involved</i></li> <li>✓ <i>Perception that suppliers would go to jail if it did not meet requirements, stakeholder indemnification</i></li> </ul>
<p><b>Product Complexity</b></p> <ul style="list-style-type: none"> <li>✓ <i>Verified equipment technology and support exists during Covid</i></li> <li>✓ <i>Better understanding of materials is needed</i></li> <li>✓ <i>Better automated software system that documents the requirements and solution</i></li> </ul>	<p><b>New Dimension ~ Viability of alternative</b></p> <ul style="list-style-type: none"> <li>✓ <i>Go/No Go Decision (does AM make sense)</i> <ul style="list-style-type: none"> <li>○ <i>Resources</i></li> <li>○ <i>How many do you need?</i></li> <li>○ <i>Interim vs Bridge vs Permanent solution</i></li> </ul> </li> </ul>

**Identified 6 agnostic and tailorable example crises situations**

## Assessing Additive Manufacturing Crises Response Key Takeaways

- *AMCPR Playbook exists, distribute / update / identify stakeholders*
- *On-going working group is needed*
- *Gather the good (worked) that was accomplished*
- *Develop plan for Action Officers*
- *Methodology vs Point Solution*
- *Annual wargame*
- *Identify and leverage existing activities*
- *Critical to understand “who is in charge”*
- *Need: **Authority/Knowledge Base /Policy***
- *Work with OSD to determine applicability to “All Partners Access Network (APAN)”*

# Assessing Additive Manufacturing Crises Response Recommendations and Next Steps

*Address the following from “DoD Additive Manufacturing Strategy”*

## **Goals**

- *Expand proficiency in AM: **learn, practice and share** knowledge*
- *Align AM activities across DoD and with external partners*

## **Primary Need Addressed**

- *New business models for contracting and acquisition of AM digital technical data*
- *Logistics model for production of AM parts at forward operating locations*

## Assessing Additive Manufacturing Crises Response Recommendations and Next Steps

1. *On-Going Working Group*
2. *DoD Capability Fold into Prototype*
  - *Round out existing AM CPR Playbook*
    - *OIB Benefit*
    - *IB Benefit*
    - *Capture/Establish “National AM Knowledge”*
      - ✓ *“Clearinghouse for Information”*
  - *Wargame ~ Identify and Test Concepts*
    - *Normalcy*
    - *Crisis*
  - *Connect Digital Thread ~ Leverage existing platform (JAMMEX; 3YourMind) ~ Become google maps of AM Digital Advanced Additive Manufacturing (DAAM) System*
  - *Inform/Drive Policy and Law*

# Assessing Additive Manufacturing Crises Response

## Questions?

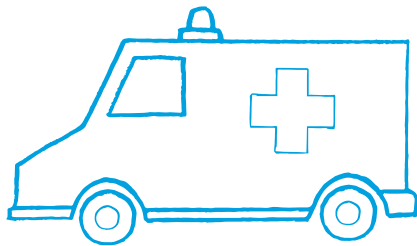


# Assessing Additive Manufacturing Crises Response

## Backup Slides

## How to use this playbook

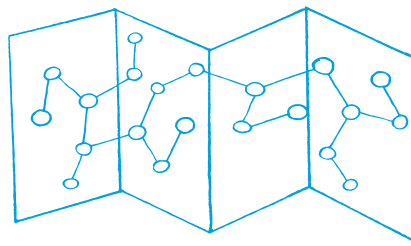
This playbook aims to support the advanced manufacturing ecosystem to collaborate and prepare for future crises by building agile manufacturing capacity and supply chain resiliency.



### **PREPARE FOR FUTURE CRISES**

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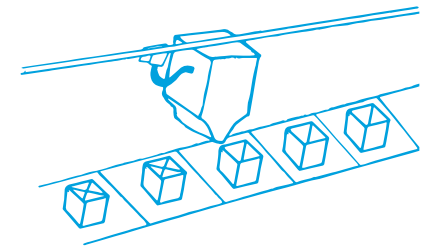
Use this document in anticipation of the next crisis in order to assemble and effectively target, deliver, and monitor a crisis response



### **FOSTER ECOSYSTEM COLLABORATION**

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Use this document to engage with the advanced manufacturing ecosystem and drive collaboration and high-quality, diverse solutions



### **BUILD CAPACITY & RESILIENCY**

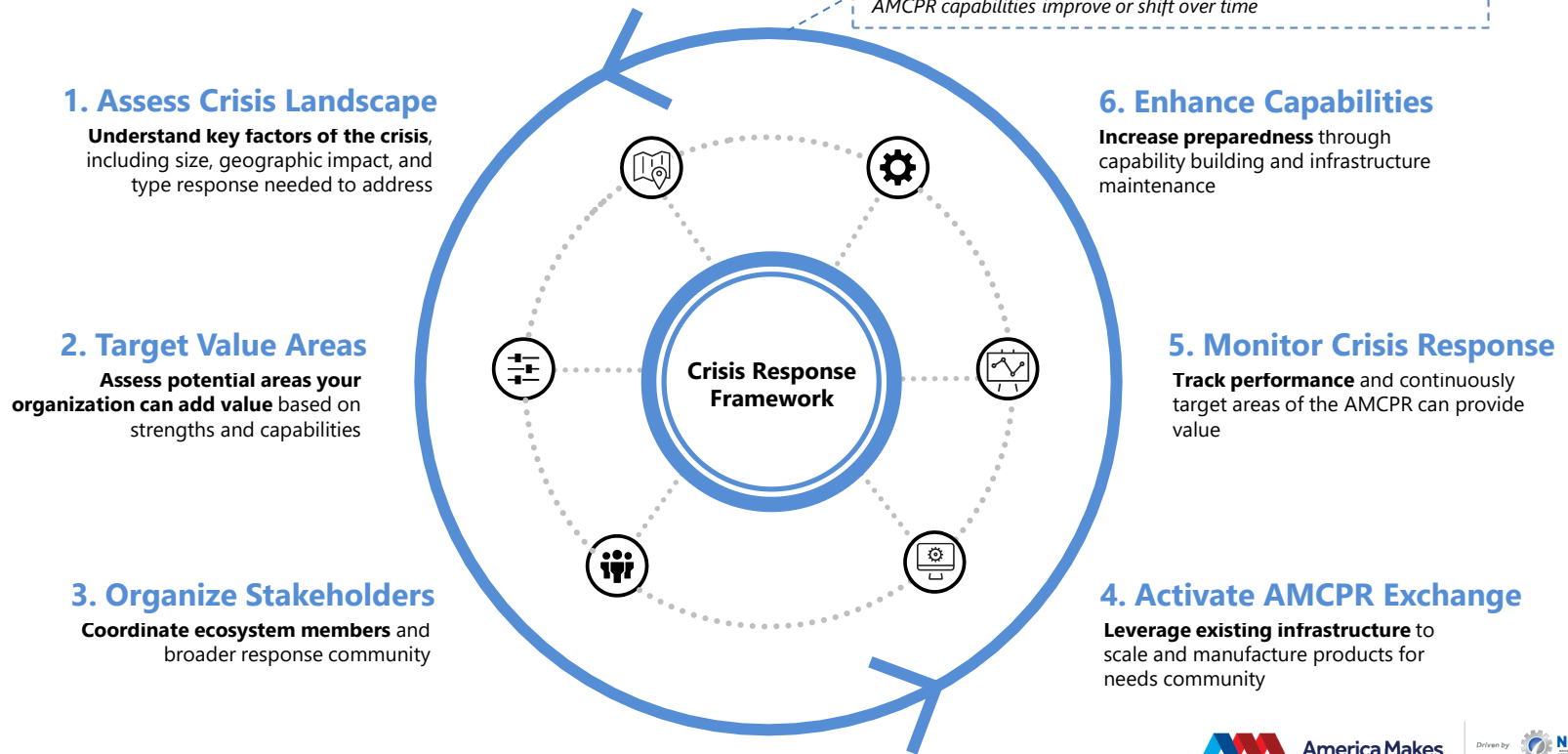
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Use this document to identify and bridge supply capability gaps and enhance digital infrastructure in support of crisis response

# Crisis Response Framework Overview

This framework was developed from insights gained during the AM CPR effort to address PPE and medical equipment shortages throughout the COVID-19 pandemic. This iterative response structure aims to accelerate the recovery and resiliency phases of an advanced manufacturing community response.

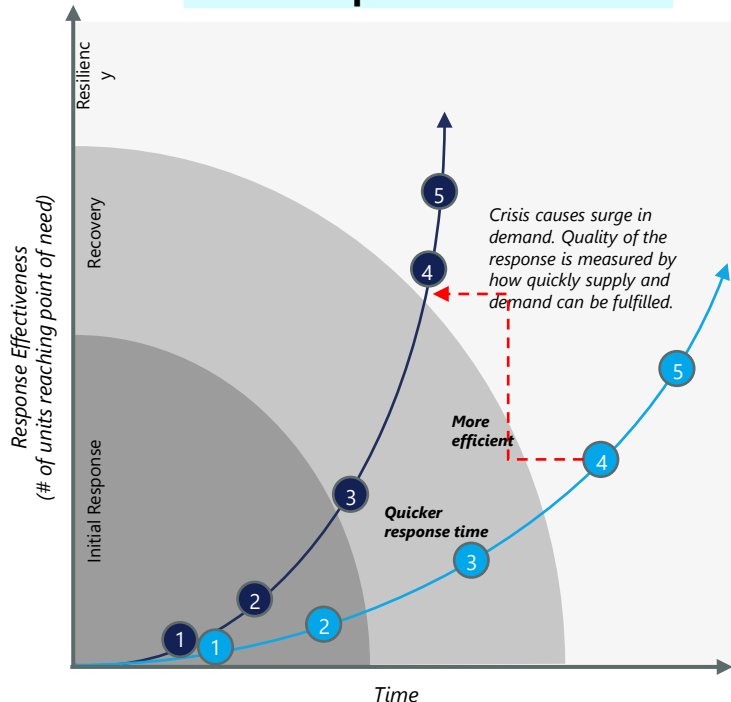
*This process is cyclical for as long as necessary as crises evolve and AM CPR capabilities improve or shift over time*



## Long-term opportunity for the AM CPR Program to accelerate the crisis response timeline

The AM CPR will **enable the mobilization of a supplier network** – targeting regions with the most acute needs - to **more quickly meet demand and deliver critically needed parts**. An established response network that is coordinated and able to mobilize regional production to meet local needs will enable the most timely and effective response to national crises, climate events, or impacted supply chains.

### Crisis Response Timeline



- ▶ : **AM CPR:** Crisis Response with Established Response Capability
- ▶ : Crisis Response **without** Established Response Capability

### Crisis Response Goals

Initial Response  
Recovery  
Resiliency

- 1
- 2
- 3
- 4
- 5

- 1 Conduct initial crisis and response assessment
- 2 Identify AM CPR value areas and initiate rapid response activities
- 3 Return supply chain capacity to normal operations
- 4 Strengthen response capabilities
- 5 Enhance AM CPR Exchange infrastructure

## Determine which crisis cycle the AMCPR is responding to

The Federal Emergency Management Agency (FEMA) identifies four major phases of a disaster or crisis:

1. Preparedness
2. Response
3. Recovery
4. Mitigation

The information the AMCPR needs to know when evaluating the crisis landscape changes depending on the crisis stage, in addition to the needs communities and the challenges they may face.

These cycles can be considered when devising crisis response efforts. Recognition of preparation and mitigation phases will enable the AMCPR to support crises outside of immediate crisis response efforts and use its diverse ecosystem, government relationships, and COVID-19 lessons learned.

## Consider the differences in response activities and at need communities depending on the current phase of the crisis

### Phase 1: Preparedness

This phase entails the development of emergency preparedness plans to minimize the loss of life and physical damage

Key questions:

- *What types of supply gaps are likely to appear?*
- *Which groups/businesses are less likely to prepare for disasters?*
- *Which groups/businesses will lack essential emergency response items?*

### Phase 2: Response

This phase requires the necessary action to save lives and prevent further damage in a crisis.

Key questions:

- *Which groups are least likely to hear, understand, and respond to warnings?*
- *Which groups will have difficulty following emergency directives?*
- *Which groups will need emergency medical care or continuation of medical care, and which groups are least likely to have access to emergency services?*

### Phase 4: Mitigation

This phase includes developing policies to reduce risks to people and property during a disaster.

Key considerations:

- *What digital solutions will aid in future responses?*
- *What resources are needed by at-risk groups during an emergency?*
- *What infrastructure will aid in future crisis responses?*

### Phase 3: Recovery

This phase focuses on the efforts after a disaster occurs to restore the community back to normal through repairing, replacing, or rebuilding property.

Key questions:

- *Which groups or industries are most likely to have experienced the greatest economic or emotional stress?*
- *What products or services are needed to revitalize groups, industries, or communities?*

<sup>1</sup> Centers for Disease Control: Planning for an Emergency: Strategies for Identifying and Engaging At-Risk Groups