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Research to Standards
ADDITIVE MANUFACTURING

SME Strategy Day- AM Industry Outlook

AM Standard Development

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Chicago, IL

ASTM INTERNATIONAL
AUBURN UNIVERSITY
EWI We Manufacture Innovation
mtc Manufacturing Technology Centre
NAMIC NATIONAL ADDITIVE MANUFACTURING INNOVATION CLUSTER
NASA
NIAR

Problem Statement

- **AM standards development is a lengthy process**
  - Voluntary process;
  - Highly technical topics;
  - Lack of publicly available data;
  - Etc.
- **Current approach** could result in:

Standards gaps and **duplications** of efforts

Inconsistent standards R&D across industries globally

No dedicated workforce to drive R&D for standards development

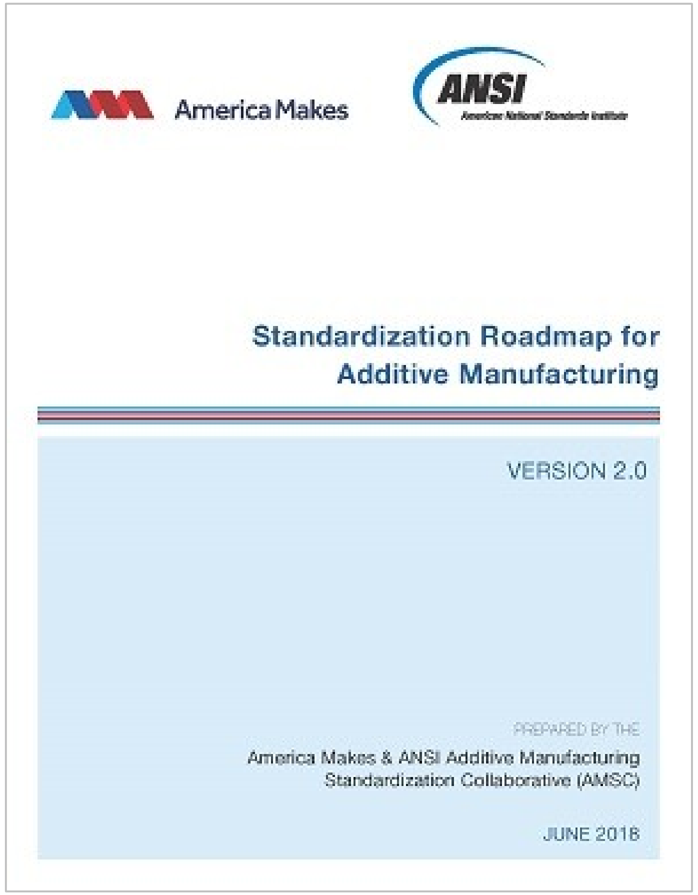
Lack of global acceptance of standards

ASTM AM CoE – Collaboration

- **Leverage our expertise and resources**
- **ASTM AM CoE continues working with the Government, Industry, and Academia**

ASTM AM CoE – Coordination

- **Jointly developed by America Makes and ANSI**
  - 93 gaps
    - 18 gaps as high priority,
    - 51 as medium priority,
    - 24 as low priority.
  - **65 gaps require R&D!**



America Makes
ANSI

Standardization Roadmap for
Additive Manufacturing

VERSION 2.0

PREPARED BY THE
America Makes & ANSI Additive Manufacturing
Standardization Collaborative (AMSC)

JUNE 2018

ASTM AM CoE – R&D Projects

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- **ASTM formed Additive Manufacturing Center of Excellence (AM CoE) in 2018**

Why AM CoE?

To accelerate AM standardization/adoption by bridging standards development with R&D

Why R&D Projects?

- Short-term;
- Highly-focused;
- High-priority (linked to AMSC roadmap and Committee F42)

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R&D Projects

- Round 1: 2018-2019 (5 projects)

Organization	Project	Organization	Project
EWI	Post Processing (Surface finishing and Characterization)	NASA / Auburn University	LB-PBF Process Qualification
MTC	Feedstock (Powder quality guide)	NIAR	Mechanical Testing of Polymer AM
Auburn University	Mechanical Testing of Metal AM		

- Round 2: 2019-2020 (9 projects)

Organization	Project	Organization	Project
EWI	Standardization of Data Pedigree	NASA / Auburn University	LB-PBF Process Qualification – Phase II
MTC	Design Guide for Post-Processing	NIAR	Static Properties for Polymer AM
MTC	Feedstock (Powder Quality Guide) – Phase 2	NIAR	Coupon-Part Correlation (Polymers)
Auburn University	Rapid Quality Inspection Specimen (RQIS)	NAMIC	In-process Monitoring
		NAMIC	Design Guides for AM Processes

ASTM AM CoE – America Makes Projects

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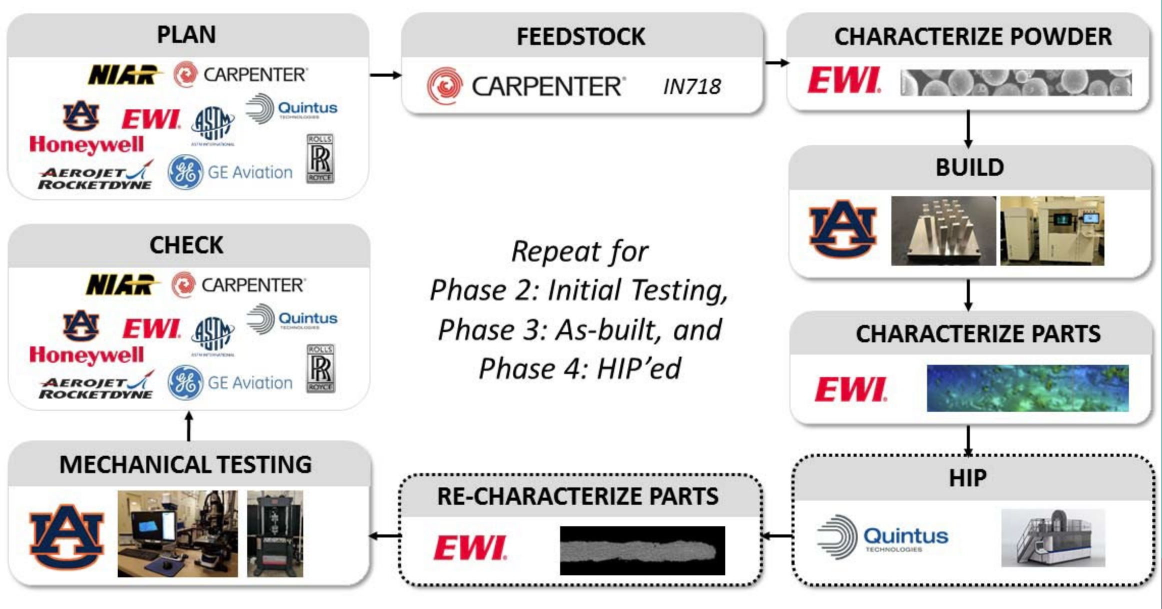
AAPT (Advancing AM Post-Processing Techniques)

Lead Partner: Auburn University

Problem Statement: lack of best practices for post-processing of AM components

Objective: Determine and enable the use of quantitative mechanical performance debit for as-built versus machined and HIPed versus non-HIPed thin walled components and components with narrow flow channels

AMSC Gap: D4, QC2, and QC4.



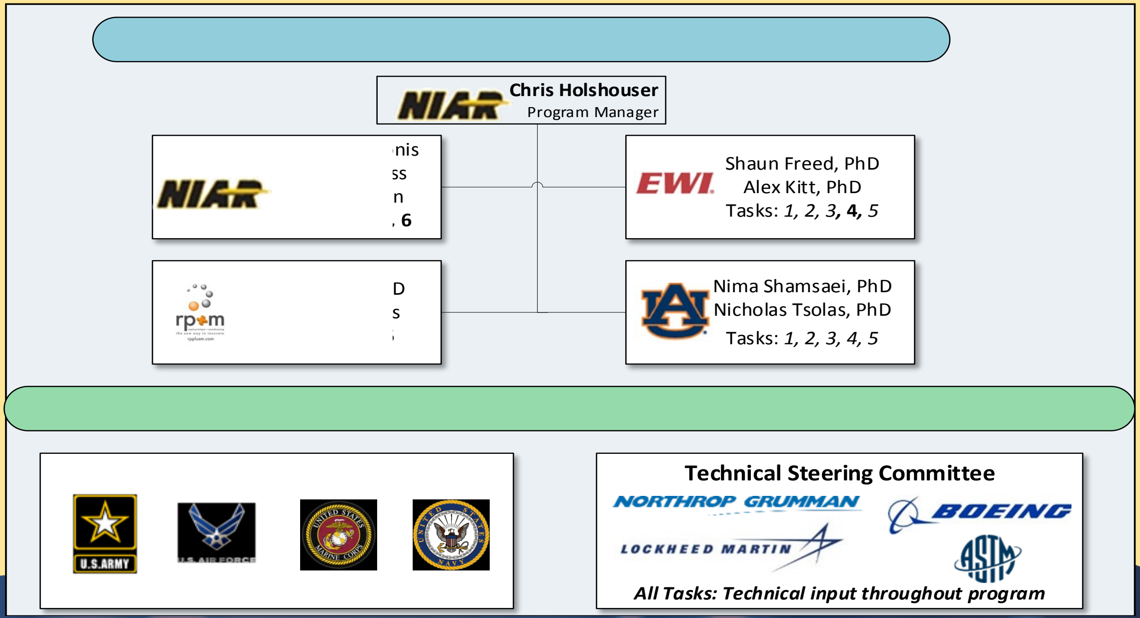
ATRQ (Advanced Tools for Rapid Qualification)

Lead Partner: NIAR

Problem Statement: Service life predictive tools for application specific characterization do not exist for polymer AM materials exposed to harsh environmental conditions

Objective: Quantify service life of AM polymer parts used in austere field environments

AMSC Gaps: FMP1, D3, PC9



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Q&A

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Helping our world work better

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