

**America Makes & ANSI Additive Manufacturing Standardization Collaborative (AMSC)
Phase 2 Working Group (WG) Architecture (updated 1/16/18)**

Working Groups

Participants may sign up for one or more WGs using the sign-up sheet. Normal meeting times are noted below. In some cases, alternate dates will be selected, such as when scheduling conflicts arise because of holidays and the like. Check with staff.

Design WG

Meets: 1st and 3rd Tuesdays of every month from 9:30-11:00 am Eastern.

Co-Chairs: John Schmelzle, NAVAIR; Lynne Webster, MITRE

Design guides
Design tools
Design for specific applications
- Design for assembly
- Design for printed electronics
- Design for medical
Design documentation
Design verification and validation

Precursor Materials WG

Meets: 2nd Monday of every month from 3:00-4:00 pm Eastern.

Co-Chairs: Jim Adams, MPIF; Justin Whiting, NIST

Storage, handling and transportation
Characterization
- Chemical composition
- Flowability
- Spreadability
- Density (apparent vs. tapped)
- Particle size and particle size distribution
- Particle morphology
- Feedstock sampling
- Hollow particles and hollow particles with entrapped gas
AM process-specific metal powder specifications

Process Control WG (includes NDE for process monitoring)

Meets: 1st and 3rd Tuesdays of every month from 2:00-3:30 pm Eastern. Co-Chairs: Susan Hovanec, NAVSEA; Justin Rettaliata, NAVSEA

Digital format and digital system control
Machine calibration and preventative maintenance
Machine qualification
Parameter control
Adverse machine environmental conditions: effect on component quality
Precursor material handling: use, re-use, mixing, and recycling powder
Precursor material flow monitoring
Environmental health and safety: protection of machine operators
Configuration management: cybersecurity
Process monitoring

Post-processing WG

Meets: 3rd Monday of every month from 11:30 am-12:30 pm Eastern.

Co-Chairs: Jason Fox, NIST; Jing Zhang, Indiana University-Purdue University Indianapolis

Heat treatment
Hot isostatic pressing (HIP)
Surface finish
Machining
Post curing methods

Finished Material Properties WG

Meets: 4th Tuesday of every month from 3:00-4:30 pm Eastern.

Co-Chairs: Mohsen Seifi, ASTM International; Roger Narayan, UNC/NCSU

Mechanical properties
Component testing
Bio-compatibility & Cleanliness of medical devices
Chemistry
Design allowables
Microstructure

Qualification and Certification WG

Meets: 1st and 3rd Wednesday of every month from 2:00-3:30 pm Eastern.

Co-Chairs: Rachael Andrulonis, Wichita State Univ-NIAR; Jessica Coughlin, Naval Nuclear Laboratory

Identified guidance documents (FDA Guidance, Lockheed Martin AM Supplier Quality Checklist, Aerospace Corp MAIW, CMH-17 and MMPDS Handbooks, AWS D20, NASA MSFC Draft Standard, ASME Y14.46)
User-group/industry perspectives on Q&C

Nondestructive Evaluation (NDE) WG (of Finished Parts)

Meets: 3rd Friday of every month from 11:00 am-12 noon Eastern. Co-Chairs: Patrick Howard, GE Aviation; Steve James, Aerojet Rocketdyne

Common defects catalog using a common language for AM fabricated parts
Test methods or best practice guides for NDE of AM parts
Dimensional metrology of internal features
Data fusion

Maintenance WG

Meets: 4th Monday of every month from 2:00-3:00 pm Eastern.

Co-Chairs: David Coyle, NAVSUP WSS; Carlo Canetta, MITRE

Standard repair procedures
Standard technical inspection processes
Model based inspection
Standards for tracking maintenance operations
Cybersecurity for maintenance
Finishing and assembly, welding, grinding, coating, plating

Polymers WG.

Meets: 2nd and 4th Wednesdays of the month from 9:30–11:00 am Eastern

Co-Chairs: Jim Williams, All Points Additive; Doug Greenwood, NAVAIR

A **new** "Polymers" WG will consider the need to enhance content on polymers across the AMSC roadmap. New text or gaps identified by the Polymers WG will be shared with the applicable WG(s) above.

Medical WG.

Meets: 1st and 3rd Mondays of the month from 2:00–3:30 pm Eastern

Co-Chairs: Lauralyn McDaniel, SME, and Dan Fritzinger, DePuy-Synthes Division of Johnson and Johnson

Because of resource considerations, the medical sector determined during phase one to meet as a sector to look at horizontal topics across the WGs. It will continue to do so.

Industry-Sectors*

An outcome of the September 7, 2017 meeting was that an appendix listing issues/gaps of particular interest to the various sectors could be appended to the main roadmap document. Therefore, participants are asked to indicate their sector using the sign-up sheet. At some later point in the process, the sectors may wish to meet individually to consider the document from the perspective of their sector, just as the medical sector has been doing.

Aerospace/Defense

Aircraft manufacturers
Commercial airline and
general aviation suppliers
Government agencies
Military personnel and
suppliers

Medical

Clinicians
Medical device manufacturers
Technology providers

**Ground Vehicle/
Heavy Equipment**

Commercial/personal ground
transportation
manufacturers/suppliers
Civil infrastructure design &
construction firms
Earth moving & agricultural
machinery manufacturers

Energy

Nuclear energy providers
Oil and gas companies
Renewable energy suppliers
Government agencies

Industrial & Commercial

Machinery

Manufacturers of machines
that make production
parts/components for other
end users/systems

Electronics

Electrotechnology companies

*Stakeholder examples in the Sectors are meant to be illustrative, not comprehensive.