

**America Makes & ANSI Additive Manufacturing Standardization Collaborative (AMSC)  
Phase 2 Working Group (WG) Architecture (updated 4/2/18)**

**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. **NOTE: WG/SGs are currently on hiatus until further notice.**

**Design WG**

**Meets: 1<sup>st</sup> and 3<sup>rd</sup> 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  
Design for anti-counterfeiting

**Precursor Materials WG**

**Meets: 2<sup>nd</sup> Monday of every month from 3:00-4:00 pm Eastern. Co-Chairs: Jim Adams, MPIF; Justin Whiting, NIST**

Storage, handling and transportation  
Characterization of powders  
Characterization of material extrusion feedstock (filaments & pellets)  
Characterization of liquid feedstock

**Process Control WG (includes NDE for process monitoring)**

**Meets: 1<sup>st</sup> and 3<sup>rd</sup> 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 feedstock  
Precursor material flow monitoring  
Environmental health and safety: protection of machine operators  
Configuration management: cybersecurity  
In-Process monitoring  
Anti-counterfeiting

**Post-processing WG**

**Meets: 3<sup>rd</sup> 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 (metals, polymers)  
Hot isostatic pressing (HIP) (metals)  
Surface finish (surface texture) (metals, polymers)  
Machining (metals, polymers)  
Post curing methods (polymers)

**Finished Material Properties WG**

**Meets: 4<sup>th</sup> Tuesday of every month from 3:00-4:30 pm Eastern. Co-Chairs: Mohsen Seifi, ASTM International; Roger Narayan, UNC/NCSU**

Material properties  
Component testing  
Bio-compatibility & cleanliness of medical devices  
Chemistry  
Design allowables  
Microstructure

**Qualification and Certification WG**

**Meets: 1<sup>st</sup> and 3<sup>rd</sup> 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, Nadcap program, Aerospace Corp MAIW, CMH-17 and MMPDS Handbooks, AWS D20, NASA MSFC Standard, ASME Y14.46, Underwriters Laboratories)  
User-group/industry perspectives on Q&C

**Nondestructive Evaluation (NDE) WG (of Finished Parts)**

**Meets: 3<sup>rd</sup> 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  
NDE of polymers and other non-metallic materials  
NDE of counterfeit AM parts  
NDE acceptance criteria for fracture critical AM parts

**Maintenance WG**

**Meets: 4<sup>th</sup> Monday of every month from 2:00-3:00 pm Eastern. Co-Chairs: David Coyle, NAVSUP WSS; Carlo Canetta, MITRE**

Maintenance and sustainment of machines  
Standard repair procedures  
Standard technical inspection processes  
Model-based inspection  
Standards for tracking maintenance operations  
Cybersecurity for maintenance  
Surface preparation for additive repair

**Polymers WG.**

**Meets: 2<sup>nd</sup> and 4<sup>th</sup> 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 is enhancing 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: 1<sup>st</sup> and 3<sup>rd</sup> 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 continues to do so.

**Industry-Sectors\***

A suggestion from the September 7, 2017 phase 2 kick-off meeting was that an appendix listing issues/gaps of particular interest to individual sectors potentially could be appended to the main roadmap document as a navigational tool. Indicating your sector on the sign-up sheet will make it easier to discuss the roadmap from a sector perspective should that be deemed desirable. As noted, medical already is meeting as a sector.

**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.