AMMO WG Teleconference Minutes – 11 January 2017

On 11 January, 2017 the Additive Manufacturing Maintenance Operations (AMMO) working group conducted a teleconference. A brief summary of the teleconference follows:

**DoD Roadmap** – Mark Vitale, Deloitte, gave a presentation on the DoD Joint Additive Manufacturing Roadmap developed by a joint team composed of members from the military Services, DLA, America Makes, and Deloitte. The roadmap provides a collective framework that identifies 4 focus areas or “swim lanes” – Design, Materials, Process, and Value Chain, and the corresponding sequenced technology elements identified for each lane. Each of these elements will likely become “R&D projects” in the future, if not already underway. The brief concluded with the following recommendations:

* Create a DoD‐wide coordination plan for advancing AM capabilities
* Appoint lead integrator and council
* Include relevant stakeholders
* Initial execution
* Prioritize objectives and coordinate plans between services based on synergy within DoD roadmap
* Continuous improvement
* Revise and refine implementation plan to reflect changing priorities and more recent developments
* Measure progress towards key objectives

Note: The roadmap is owned by the individual military services and DLA.

Note #2: The slides will be sent to the AMMO WG through email, and posted online

**Next AM Wargame** – Mark Vitale, Deloitte & Marilyn Gaska, LMCO, discussed the next Additive Manufacturing (AM) Business Model Wargame, which I will refer to as AM Wargame II. The event is scheduled for 16-17 May (Tue-Wed), at the Lockheed Martin Global Vision Center in Crystal City in Arlington, VA. The facilities include VTC capability, an auditorium, and breakout rooms. The joint sponsors include the AMMO WG, OSD(MPP), and America Makes and will include members from the Legal AM subgroup. The intent is to gain another level of understanding of AM aligned with the 4 areas in the DoD roadmap. Volunteers are being actively sought for the core planning team. Anybody interested in becoming a member of the team, please contact Mark Vitale at mvitale@deloitte.com or Marilyn Gaska at [marilyn.gaska@lmco.com](mailto:marilyn.gaska@lmco.com). The planning team is looking for government and industry members with experience in contracting, legal, procurement, and/or business executives. More details will be disseminated in the near future.

* **America Makes Standards Roadmap Work –** Jim McCabe, ANSI, provided a status update of the America Makes & ANSI Additive Manufacturing Standardization Collaborative (AMSC), stating that the purpose is to identify existing standards and specifications, assess gaps, and make recommendations for priority areas where there is a perceived need for additional standardization. The effort is about laying out direction for a coordinated effort, not developing standards. Jim identified the five primary AMSC working groups: Design, Process and Materials, Qualification & Certification, Nondestructive Evaluation, and Maintenance. Eight maintenance gaps were identified:
  + Standards for AM analyses in Reliability Centered Maintenance (RCM) and Conditioned Based Maintenance (CBM+) are needed
  + Current standards may not consider the variety of materials that can be used to create tools using additive manufacturing
  + Standards for AM LORA are needed
  + A standard Inspection process for component or tooling defects is needed to consider additive manufacturing technologies as potential solutions for preventative and corrective maintenance actions
  + Standard practices for model based inspection methods using AM are needed for maintenance assessments and scheduling
  + A standard is needed for how preventative maintenance operations of AM machines are tracked
  + In support of on-site repairs, guidance is needed that addresses cybersecurity considerations for maintenance and repair of parts that have 3D models ready to print
  + Standards are needed for chemical compatibility with additively manufactured materials for surface cleaning in preparation for an additive repair process. Additionally, standards are needed for removal of coatings for additively manufacture parts

11 January was the deadline for comments on the draft roadmap, which identified 88 gaps or areas where no public standards or specifications exist. The target date for roadmap publication is Feb 28. A copy of Jim’s slides will be sent via email to the AMMO WG.

**America Makes Sustainment Advisory Group Update** – Chair,Marilyn Gaska, LMCO:

* The AMSAG met on 16 Dec.
* The new AMSAG Secretary is Rich Lonardo. The Vice Chair is Dana Ellis, NCMS.
* The AMSAG discussed the next AM Business Model event (See Above).
* Brett Conner and Ashley Martof of Youngstown State University continue their AM business model update.
* NIST provided a cybersecurity update.
* Jim McCabe provided an update on the AMSC Standards effort (See above)
* Marilyn provided a review of the Additive Manufacturing Town Hall conducted on Dec 5 at the DoD Maintenance Symposium. You can view an abstract and presentations at: <http://www.sae.org/events/dod/2016/attend/program/>
* DLA is looking at standard processes & approaches and when AM applies to maintenance, and try to solve some of those problems. (Tony Delgado & Kyle Hendricks)
* Next AMSAG meeting is 3 February.

**Next Meeting:** - The next AMMO WG call is at 10:30-12:00 am (Eastern Time) on Wednesday, 1 February.

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