



National Armaments
Director Group

UK MOD AM Facilities Assurance Approach

FIIF Event: Defence & Dual Use Technologies

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ONE GROUP ♦ MANY STRENGTHS ♦ SINGLE MISSION

Introduction

- The Defence Quality Assurance Field Force (DQAFF) sits within the National Armaments Director (NAD) Group and is the primary organisation within the MOD for the delivery of Government Quality Assurance (GQA) surveillance during all phases of the acquisition of defence capability.
- Government Quality Assurance Representatives (GQARs) conduct assurance activities throughout the Defence Supply Chain on behalf of the MOD and NATO allies and partners.
- GQARs build and maintain knowledge and relationships with suppliers.

Additive Manufacturing Working Group (AMWG)

- It was identified that existing assurance mechanisms focused on the part rather than the facility and supporting processes (like those used for “traditional” manufacturing processes).
- AMWG tasked with creating guidance and tools to enable a collaborative approach to AM Facility Assurance derived from ISO 9001 but tailored for AM covering the following areas:
 - Machine Selection
 - Process Control
 - Metrology & Calibration
 - Feedstock Management & Control
 - Post Processing
 - Verification & Validation
 - Certification & Cyber Security

AMWG Approach

- Two tools were subsequently created:
 - Preliminary Question Set: Microsoft Form sent to supplier to understand scope of AM operations and applicable process areas with additional benefit of understanding AM capability of new suppliers / existing supply chain.
 - Tailored Question Set: Excel workbook to assess maturity levels of applicable areas against specified criteria (note: no obligation for suppliers to implement improvements for less mature areas).

Preliminary Question Set

- Microsoft Form is sent to a supplier prior to site visit
 - Contains simple questions to allow DQAFF to understand the scope and application of AM operations at a particular site
- Data collected enables a focused approach and saves time by eliminating non-applicable questions in detailed question set

Tailored Question Set

- Detailed questions according to applicable process areas defined in preliminary question set in a face to face or virtual environment.
- The maturity of evidence provided against each question is scored on a scale of 0-3 (0 = low maturity, 3 = high maturity).
- Scoring is used to reflect process maturity which provides an actionable improvement plan for suppliers and can be used as a benchmark for reassessment in the future if required.

Testing & Feedback

- DQAFF have tested the approach at multiple AM facilities across the Defence supply chain and overall feedback has been positive.
- Collaborative approach has developed relationships with supply chain partners and improved DQAFF understanding of AM capabilities.
- Suppliers receive an assessment clearly defining assessed maturity levels in supporting plans for continuous improvement activities.
- Challenges included estimating the time required for the assessments, securing the supporting resources and enabling consistent use by different GQARs.
 - Tailored question set was refined to improve efficiency and guidance document created to ensure correct and consistent use by GQARs.

What's Next?

- NAD Group management to define use case for the Facilities Assurance Approach (where and when should it be used?).
- Engage with regulatory authorities to identify opportunities for the approach to be a recognised assurance mechanism (e.g DQAFF engaging with UK Military Aviation Authority Regulator).
- Conduct further maturity assessments of AM facilities to continually improve the approach.

Questions?

Contact Details

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