

Qualification & Certification Gap QC2: AM Part Classification System for Consistent Qualification Standards (High) ("Defense Industry" Gap)	43.94%	29
Process Control Gap PC4: Machine Qualification (Medium) (R&D) ("Defense Industry" Gap)	34.85%	23
Design Gap D17: Contents of a TDP (High) (R&D) ("Defense Industry" Gap)	33.33%	22
Qualification & Certification Gap QC1: Harmonization of AM Q&C Terminology (High) ("Defense Industry" Gap)	27.27%	18
Finished Material Properties Gap FMP4: Design Allowables (High) (R&D)	25.76%	17
Nondestructive Evaluation Gap NDE1: Terminology for the Identification of AM Flaws Detectable by NDE Methods (High) ("Defense Industry" Gap)	22.73%	15
Nondestructive Evaluation Gap NDE3: Standard Guide for the Application of NDE to Objects Produced by AM Processes (High) (R&D) ("Defense Industry" Gap)	22.73%	15
Qualification & Certification Gap QC4: Process Approval for DoD-procured Parts (Medium) (R&D) ("Defense Industry" Gap)	21.21%	14
Design Gap D4: Design Guides for Specific Applications (High)	21.21%	14
Process Control Gap PC2: Machine Calibration and Preventative Maintenance (High) (R&D)	21.21%	14
Finished Material Properties Gap FMP1: Material Properties (High) (R&D)	21.21%	14
Process Control Gap PC7: Recycle & Re-use of Materials (High) (R&D)	19.70%	13
Process Control Gap PC16: In-Process Monitoring (Medium) (R&D)	18.18%	12
Design Gap D19: Organization Scheme Requirement and Design Control (High) ("Defense Industry" Gap)	16.67%	11
Precursor Materials Gap PM7: AM Process-Specific Metal Powder Specifications (Medium) (R&D) ("Defense Industry" Gap)	15.15%	10
Design Gap D1: Decision Support: Additive vs. Subtractive (Medium)	15.15%	10
Qualification & Certification Gap QC10: Verification of 3D Model (High) (R&D)	15.15%	10
Design Gap D18: New Dimensioning and Tolerancing Requirements (High) ("Defense Industry" Gap)	13.64%	9
Maintenance & Repair Gap M3: AM Level of Repair Analysis (Medium) ("Defense Industry" Gap)	13.64%	9
Design Gap D22: In-Process Monitoring (Medium) (R&D)	12.12%	8
Design Gap D27: Standardized Design for Additive Manufacturing (DFAM) Process Chain (Medium) (R&D)	12.12%	8
Qualification & Certification Gap QC3: Harmonizing Q&C Terminology for Process Parameters (Medium) ("Defense Industry" Gap)	10.61%	7
Maintenance & Repair Gap M7: Cybersecurity for Maintenance (Medium) (R&D) ("Defense Industry" Gap)	10.61%	7
Post-processing Gap P1: Post-processing Qualification and Production Builds (Medium) (R&D)	10.61%	7
Design Gap D28: Specification of Surface Finish (Medium) (R&D) ("Defense Industry" Gap)	9.09%	6
Design Gap D20: Neutral Build File Format (Low) (R&D) ("Defense Industry" Gap)	9.09%	6
Nondestructive Evaluation Gap NDE8: NDE Acceptance Criteria for Fracture Critical AM Parts (Medium) (R&D) ("Defense Industry" Gap)	9.09%	6
Maintenance & Repair Gap M4: Physical Inspection of Parts Repaired Using AM (Medium) ("Defense Industry" Gap)	9.09%	6
Design Gap D2: Decision Support: Additive Processes (Medium) (R&D)	9.09%	6
Precursor Materials Gap PM5: Metal Powder Feedstock Sampling (High) (R&D)	9.09%	6
Nondestructive Evaluation Gap NDE5: Data Fusion (Medium)	9.09%	6
Design Gap D21: New Terminology in Design Documentation (Medium) ("Defense Industry" Gap)	7.58%	5
Post-processing Gap P4: Surface Finish (Medium) (R&D) ("Defense Industry" Gap)	7.58%	5
Maintenance & Repair Gap M5: Model-Based Inspection (Medium) ("Defense Industry" Gap)	7.58%	5
Design Gap D26: Design for Measurement of AM Features/Verifying the Designs of Features such as Lattices, etc. (Medium) (R&D)	7.58%	5
Process Control Gap PC15: Configuration Management: Cybersecurity (Medium) (R&D)	7.58%	5
Finished Material Properties Gap FMP5: Microstructure (Medium) (R&D)	7.58%	5
Maintenance & Repair Gap M8: Surface Preparation for Additive Repair (Medium) (R&D) ("Defense Industry" Gap)	6.06%	4
Design Gap D3: Process-Specific Design Guidelines (Medium)	6.06%	4

Design Gap D15: Design of Test Coupons (Low) (R&D)	6.06%	4
Process Control Gap PC14: Environmental Health and Safety: Protection of Machine Operators (High) (R&D)	6.06%	4
Process Control Gap PC3: Machine Health Monitoring (Low) (R&D)	6.06%	4
Qualification & Certification Gap QC9: Personnel Training for Image Data Set Processing (High)	6.06%	4
Nondestructive Evaluation Gap NDE2: Standard for the Design and Manufacture of Artifacts or Phantoms Appropriate for Demonstrating NDE Capability (Medium)	6.06%	4
Process Control Gap PC6: Adverse Machine Environmental Conditions: Effect on Component Quality (Low) (R&D) ("Defense Industry" Gap)	4.55%	3
Nondestructive Evaluation Gap NDE4: Dimensional Metrology of Internal Features (Medium) (R&D) ("Defense Industry" Gap)	4.55%	3
Nondestructive Evaluation Gap NDE6: NDE of Polymers and Other Non-Metallic Materials (Low) (R&D)("Defense Industry" Gap)	4.55%	3
Design Gap D7: Design Guide for Post-processing (Medium) (R&D)	4.55%	3
Design Gap D13: Image Processing and 2D to 3D Conversion (Medium) (R&D)	4.55%	3
Process Control Gap PC1: Digital Format and Digital System Control (Medium) (R&D)	4.55%	3
Process Control Gap PC5: Parameter Control (Medium) (R&D)	4.55%	3
Post-processing Gap P2: Heat Treatment (HT)-Metals (Medium) (R&D)	4.55%	3
Post-processing Gap P3: Hot Isostatic Pressing (HIP) (Medium) (R&D)	4.55%	3
Qualification & Certification Gap QC5: Machine Operator Training and Qualification (Low) ("Defense Industry" Gap)	3.03%	2
Nondestructive Evaluation Gap NDE7: NDE of Counterfeit AM Parts (Low) ("Defense Industry" Gap)	3.03%	2
Maintenance & Repair Gap M6: Tracking Maintenance (Medium) ("Defense Industry" Gap)	3.03%	2
Maintenance & Repair Gap M9: Laser Based Additive Repair (Low) ("Defense Industry" Gap)	3.03%	2
Design Gap D16: Verifying Functionally Graded Materials (FGM) (Low) (R&D)	3.03%	2
Precursor Materials Gap PM2: Spreadability (Medium) (R&D)	3.03%	2
Precursor Materials Gap PM3: Particle Size and Particle Size Distribution (Medium) (R&D)	3.03%	2
Precursor Materials Gap PM8: Use of Recycled Polymer Precursor Materials (Low) (R&D)	3.03%	2
Process Control Gap PC9: Environmental Conditions: Effects on Materials (High) (R&D)	3.03%	2
Process Control Gap PC10: Re-use of Material that Has Not Been Processed (Medium) (R&D)	3.03%	2
Process Control Gap PC11: Re-use of Material that Has Been Processed (Low) (R&D)	3.03%	2
Post-processing Gap P6: Guidelines for Post-curing AM Plastics to Address Outgassing and Offgassing (Low) (R&D)	3.03%	2
Finished Material Properties Gap FMP3: Cleanliness of Medical AM Parts (High) (R&D)	3.03%	2
Qualification & Certification Gap QC8: Phantoms (Medium) (R&D)	3.03%	2
Qualification & Certification Gap QC13: Material Control Data and Procedures (Low) (R&D)	3.03%	2
Qualification & Certification Gap QC15: Sterilization of Anatomical Models (Low)	3.03%	2
Design Gap D6: Software-encodable/Machine-readable Guidelines (Medium) (R&D)	1.52%	1
Design Gap D8: Machine Input and Capability Report (Medium)	1.52%	1
Design Gap D23: Documentation of New Functional and Complex Surface Features (Low)	1.52%	1
Precursor Materials Gap PM1: Flowability (Medium) (R&D)	1.52%	1
Precursor Materials Gap PM4: Particle Morphology (Low) (R&D)	1.52%	1
Precursor Materials Gap PM6: Hollow Particles and Hollow Particles with Entrapped Gas (Low) (R&D)	1.52%	1
Precursor Materials Gap PM9: Characterization of Material Extrusion Feedstock (Filaments & Pellets) (Low) (R&D)	1.52%	1
Post-processing Gap P7: Heat Treatment (HT)-Polymers (Low) (R&D)	1.52%	1
Qualification & Certification Gap QC6: Importing Ultrasound Data (Medium) (R&D)	1.52%	1

Qualification & Certification Gap QC14: Segmentation (Medium)	1.52%	1
Qualification & Certification Gap QC16: Sterilization of Tissue Engineered Products (Medium)	1.52%	1
Maintenance & Repair Gap M1: AM Analyses in RCM and CBM (Medium) ("Defense Industry" Gap)	0.00%	0
Design Gap D5: Support for Customizable Guidelines (Medium) (R&D)	0.00%	0
Design Gap D12: Imaging Consistency (Medium)	0.00%	0
Design Gap D14: Designing to be Cleaned (Medium) (R&D)	0.00%	0
Design Gap D9: AM Simulation Benchmark Model/Part Requirement (Low) (R&D)	0.00%	0
Design Gap D10: Design for As-built Assembly (Low) (R&D)	0.00%	0
Precursor Materials Gap PM10: Sampling of Open Liquid Feedstock System (Low) (R&D)	0.00%	0
Process Control Gap PC8: Stratification (Medium) (R&D)	0.00%	0
Process Control Gap PC12: Precursor Material Flow Monitoring (Medium) (R&D)	0.00%	0
Process Control Gap PC13: Flow Parameters for Material Jetting (Low) (R&D)	0.00%	0
Post-processing Gap P5: Use of Post-cure to Reduce Toxic Gases from Uncured Polymer Feedstock (Low)	0.00%	0
Qualification & Certification Gap QC7: Protocols for Image Accuracy (Medium) (R&D)	0.00%	0
Qualification & Certification Gap QC12: Resorbable Materials (Medium) (R&D)	0.00%	0

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