JTEG Depot Technology Needs
Calendar Year 2002
Complied by JDMAG

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During calendar year 2002 the JTEG compiled maintenance technology needs submitted from the depot maintenance community. The JDMAG JTEG staff grouped these identified technology needs into the 13 JTEG Technology Categories in which the JTEG Technology Projects are also grouped. The depot technology needs were matched with the JTEG Projects (as noted with project numbers only within parentheses), and were also matched with known information other than JTEG Projects. The military service submitting the depot technology need is indicated within the brackets at the end of the technology need.

After the title of each Technology Category is the definition of that technology, followed by the depot technology needs applicable to that category. Each need is listed in numerical sequence. The bullets that follow are the potential solutions for the depot technology needs in that technology category. The numbers appearing in the brackets following the technology solutions, are the needs that technology solution may be applicable for.

For further information concerning this document or the any of the technology needs and resources, please contact Don Seger, JDMAG, 937-656-2776 (DSN 986), email donald.seger@wpafb.af.mil, or Rosi Mitchell, 937-656-2760, (DSN 986), email rosalina.mitchell@wpafb.af.mil

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1) **Best Business Practices** – Systems, practices, or procedures, which have the potential for improving the managerial oversight of industrial maintenance applications.

   Depot needs for this technology category were:

   1 - Information Management - [AF]
   2 - Depot Flow (PDM Requirements) [AF]
   3 - Burr Tag Attachment [NAVAIR CP]
   4 - Serial Number Tracking [NAVAIR CP].

   Potential solutions:

   - New Vision Serial Number Tracking; Integrated Systems Technology, Inc, 800-633-5583, www.istnewvision.com/nvserialnum.html [1,2,3,4]
   - Direct Part Marking; Telesis Technologies, Inc; Pete Ginkel, 800-654-5696, www.telesis.com [1,2,3,4]
   - Interactive Maintenance Aiding System (IMAS) (#288) [1,2]
   - Industrial Plant Equipment (IPE) Maintenance Advisor (#37907) [1,2]
   - Engineering Data Management Information and Control System -EDMICS (#328) [1,2]
   - Maintenance Mentoring System; Intelliworxx Inc, 941-378-8822, www.intelliworxx.com/mentorworxx [1,2]
   - Next Generation Inspection System; NCMS/CTMA Project # 150501; www.ncms.org [1,2,3,4]

- Advanced Integrated Maintenance Support System (AIMSS); Raytheon; 978-8585-5246; www.raytheon.com 978-858-5246; www.Raytheon; 978-8585-5246; www.raytheon.com.com [1,2,3,4]
- Advanced Specialty Engineering Networked Toolkit (ASENT); Raytheon; 978-8585-5246; www.raytheon.com [1,2,3,4]
- Generalized Automated Maintenance Environment (GAME); Raytheon; 978-8585-5246; www.raytheon.com [1,2,3,4]
- Legacy Automated Test Equipment; Boeing Company, Jim Orlet, 314-233-3306, james.orlet@mw.boeing.com [1,2,]
- Future Logistics Enterprise; Walt Atchley, Office of the Secretary of Defense, 703-614-0862, walter.atchley@osd.mil [1,2]
- Navy Best Manufacturing Practices Center of Excellence; Larry Halbig, 317-891-9901, lhalbig@bmpcoe.org [1,2,]
- Tech Solutions E-Business Program; LT Brian McIntyre, Office of Naval Research, 703-851-9064, brian_mcintyre@onr.navy.mil [1,2]
- On Demand Manufacturing Program; Gary Deckard; Battelle, 937-254-0880, Deckard@battelle.org [1,2,3,4]
- Hybrid Cellular Shop Layout Design; Irani Shahrukh, Ohio State University, 614-688-4685, irani4@osu.edu [1,2,3,4]
- 2020SoftwareDotCom; 800-718-7348, www.2020software.com [1,2]
- Industrial Management Systems Engineering; Robert Creese, West Virginia University, 304-293-4607, robert.creese@mail.wvu.edu [1,2]
- Automated Information Technology; Carl Gardner, Defense Logistics Agency AIT, 703-767-2633, carl_gardner@sra.com [1,2]
- Proactive Obsolescence Management; NUWCKeyport, Steve Osburn, 360-315-7409, sosburn@kpt.nuwc.navy.mil [1,2]
- Custom Engineered Solutions; NUWC Keyport, Steve Osburn, 360-315-7409, sosburn@kpt.nuwc.navy.mil [1,2]
- Advanced Maintenance Infotronics Technologies; University of Wisconsin-Milwaukee [1,2]
- Work Process Automation; NCMS/CTMA Project #120605; www.ncms.org [1,2]
- E-CM Electronic Collaborative Maintenance for Depot Activities; NCMS/CTMA Project # 140167; www.ncms.org [1,2,3,4]
- Advanced Learning Through Maintenance Mentoring Systems; NCMS/CTMA Project #130925; www.ncms.org [1,2]
- Cost Reduction Strategies; NCMS/CTMA Project #140209; www.ncms.org [1,2]
- Retrograde Part Identification; NCMS/CTMA Project #140327; www.ncms.org [1,2,3,4]
- Wireless Depot Equipment Tracking and Management System**;** ID Systems Inc, Ed Kaminski, 410-349-1828, www.id-systems.com [1,2,3,4]

2) Cleaning and Stripping – Technologies, practices, or procedures utilized in cleaning, degreasing, and depainting processes of any industrial maintenance application.

Depot needs for this technology category were:

1 - Abrasive Blasting Alternatives [NAVSEA]
2 - Degreasing/desalting methods and materials [NAVSEA]
3 - Helicopter Blade Depainting [NAVAIR CP] Laser Shot Peen (LSP) [AF]
4 - New Depaint Technology for Composites/Low Observables (LO) [AF
5 - Laser Paint Stripping [USMC] [NAVSEA]

Potential Solutions:

- Armex Cleaning and Coating Removal, 800-332-5424, www.armex.com [1,2,3,4,5]
- The Southwest Research Institute, 210-522-2257, www.swri.org [1,2,3,4,5]
- Laser Automated Depainting System (LADS) (#37874) [3,4,5]
- Lasers for Paint Removal Phase I (#48) [3,4,5]
- Laser Technology (#41411) [3,4,5]
- Joint Paint Removal Study- Laser (JTEG Oct 96) [3,4,5]
- Portable Laser Coating Removal System; JG-DM Project #J-00-CR-017; www.jgpp.com [3,4,5]
- CTC Lactate Ester Sub Task 024 Project; Concurrent Technologies Corporation, Mary Nelson, 800-557-2318, nelsonm@ctcgsc.org [2,4]
- Oxygen Line Cleaning System (OLCS); Versar Inc, John Herrington, 937-864-7812, herrington@erinet.com [2]
- Ice Cleaning; Ice Cleaning Systems Inc, Jerry Schlossburg, 317-257-8398, www.icecleaningsystems.com [1,2]
- Mobile Depainting Manipulator; Air Force Research Lab, John Crabill, DSN 674-4390, john.crabill@wpafb.af.mil [2,3,4]
- FlashJet Depainting System; NADEP Jacksonville, Thomas Cowherd, 904-542-0078, cowherdtr@navair.navy.mil [1,2,3,4]
- SAGE Alternatives Guide; www.clean.rti.org/altern.cfm [1,2,3,4,5]
- Buehrer-AG; 41-0-1-844-2550; www.buehrer-ag.ch/en/buehrer-ag.html [1,2,3,4,5]
- Blasting Operations and Laboratory Wastes; EPA/RTP, 513-569-7474, SAIC Project #01-0832-03-1021-010 [1,2,3,4]
- Can-Am Soda Blasting; 800-843-6160; www.reach.net/~soda [1,2,3,4]
- Stripping Alternatives for Organic Coatings; Brian Greene; Concurrent Technologies Corporation; 814-269-6820; www.dppr.ctc.com/strippng/ab-hvydu.htm [1,2,3,4,5]
- ALPHEUS; 800-257-4387; www.alpheus.info/index_ab.htm [1,2,3,4,5]
- Paints and Coatings Resource Center; Mark Eelman 908-755-7753; www.paintcenter.org/ctc/Mechrem2.cfm [1,2,3,4,5]
- Drop Blast Technology; Peter Brahan, Synergy Innovations Inc, 603-448-5454, pvb@synnovations.com [1,2,3,4]
- HydroSite for Heavy Equipment Cleaning; Hydro Engineering Inc, 800-247-8424, www.hydroblaster.com [GSA contracts GS07F-3849A and GS10F-8722G] [1,2,3,4,5]
- Selective Coating Removal Technology; Battelle Institute, John Stropki, 614-424-5415, stripki@battelle.org Also WR-ALC, Richard Slife, 478-926-1197, richard.slife@robins.af.mil [2,3,4,5]

- Degradable by Design Deicer (D3); Battelle Institute, Nick Conkle, 614-424-5616, conkle@battelle.org [2]
- Laser Coating Removal for Helicopter Blades; NCMS/CTMA Project # 140347; www.ncms.org [3,4,5]
- Laser Shot Peening of Landing Gear; NCMS/CTMA Project #140158 [1]
- Liquid CO2 for Cleaning Parts; EPA/RTP, Chuck Darvin, 919-541-7633 [1,2,3,4]
- Spray Gun Cleaning Processes, Safety-Clean Corporation, Michael Callahan, 708-697-8460 [2]

3) **Composites** – Technologies employed in the manufacture, repair, or processing of materials which have non-metallic materials in their composition.

Depot needs for this technology category were:

1 - Ceramic Armors (Methods for working and repair) [MC]

2 - Composite Materials (strength, weight reduction, methods for working and repair) [MC]

Potential Solutions:

- Advanced Composite In-service NDE System (#32) [2]
- Advanced Composite Repair Center (#221) [2]
- Composite Repair Facility (#281) [2]
- Composite Structures Repair Study - Phase I (#37) [2]
- Composite Structures Repair Study - Phase II (#38) [2]
- National Composite Center (NCC), 937-297-9450 www.compositecenter.org [1,2]
- Composite Structures; The Nordam Group [Tulsa, OK]; 918-401-5414, www.nordam.com/index.cfm [1,2]
- Composite Structure Repair; Kaman Aerospace [Hartford, CT], 860-243-7100, www.kamanaero.com/aerospace.htm [1,2]
- Composite Structure Repair; Composites Unlimited [South Irvine, CA], 949- 559-0930, www.compositesunlimited.com [1,2]
- Laminated Composite Structure Repair; TEKLAM Corporation [Corona, CA], 909-278-4563, www.teklam.com/teklam_intro.html [1,2]
- Composite Panel Manufacturing and Repair; Pacific Panels [Oakland, CA], 510-568-7288, www.pacifpanel.qpg.com [1,2]
- Rapid Damage Detection Device (RD3); WichiTech, 800-776-4277 [1,2]
- Aerospace Composite Repairs; Bell Helicopter, Vance Cribb; Bell Helicopter; 817-280-4475; vcribb@bellhelicopter.textron.com [1,2]
- Next Generation Transparency Program; Air Force Research Lab, Mike Gran; DSN 937-255-8440, michael.gran@wpafb.af.mil [2]
- Composite Research for Military Applications; University of Delaware, John Gillespie; 302-831-8149; gillespie@ccm.udel.edu [1,2]
- Fretting-Resistant Nanocomposite Coatings, Western Michigan University, Mechanical Engineering, Daniel Kujawski, 269- 387-1000 [1,2]
- Self-Healing Advanced Polymeric Composites; Western Michigan University, Mechanical Engineering, Daniel Kujawski, 269-387-1000 [1,2]
- Substitution Methodology for Composite Materials; NCMS/CTMA Project #140318 [1,2]

4) **Corrosion Control** – Technologies, practices, or procedures, which can remove corrosion, arrest the process of corrosion, or alter the electrolytic degradation of metals in any industrial maintenance application.

Depot needs for this technology category were:

1 - Boat Davit Corrosion Prevention [NAVSEA]

2 - Enhanced Digital Corrosion Detection [AF]

Potential Solutions:

- **I**nstrument for **B**iomolecular **I**nteraction **S**ensing (IBIS); Windsor Scientific Limited, 01-75-382-2522, www.windsor-ltd.co.uk [1,2]
- Corrosion Source www.corrosionsource.com [1,2]
- Corrosion Management Expert System (#270) [1]
- Laboratory Precision Immersion Ultrasonic Inspection System (#229) [1]
- Resonant Ultrasound Second Harmonic Inspection - RUSHI (#48532) [1]
- Robotic Non-Destructive Inspection, X-Ray and N-Ray System (#239) [1]
- Single-Step Magnetic Particle Inspection (#263) [1]
- Ultrasonic C-Scan Inspection System (#302) [1]
- Corrosion Management Expert System (#270) [1]
- Connector Corrosion Prevention; Hector Hernandez, WR-ALC, 478-926-0629 (DSN 468), hector.hernandez@robins.af.mil [1]
- Army CarWell T-32 Corrosion Protection System; Carl Handsy, TACOM [1,2]
- BronzGlow Coatings; BronzGlow Technologies Inc; Mike Bielamowicz, 904-825-0175, www.bronz-glow.com [1,2]
- Non-Chromate Aluminum Pretreatments; JG-DM Project #S-00-OC-016; www.jgpp.com [1,2]
- Chromium Free Primers for Inserts and Fasteners; JG-DM Project #J-95-MF-003; www.jgpp.com [1,2]
- Chromate Free Conversion Coating; JG-DM Project #J-95-OC-001; www.jgpp.com [1]
- Chromate Free Primer and Sealants; JG-DM (Data Resource Information Project); www.jgpp.com [1]
- ADSIL AD30 Coating; ADSIL LC, Tony Gedeon, 800-549-2539, www.adsil.com [1]
- Hidden Corrosion With O-Rings; Faraday Technology Company, Maria Inman, 937-836-7749, inman.faraday@erinet.com [1,2]
- Zinc Silicate Corrosion Protection; Inorganic Coatings Inc, Michael Sfirri, 800-345-0531 [1,2]
- Magnesium Alloy Corrosion Resistance; Technology Applications Group Inc, Alex Zozulin, 701-746-1818 [1,2]
- GSA Coatings Department; US General Services Administration, http://www.gsa.gov/Portal/content/offerings_content.jsp?contentOID=122950&contentType=1004 [1,2]

5) **Electronics** – Technologies or procedures which will improve the manufacture or repair of electronics equipment.

Depot Needs Were:
1 - Universal Antenna Testing Facility [NAVSEA]
Potential Solutions:

- Frequency Management Issues; AFSPCOM, LtCol Sheryl Hummel, DSN 692-5611, sheryl.hummel@peterson.af.mil
- High Density Chip-on-Board for Electronics Manufacturing; NCMS/CTMA Project # 160207
- Legacy Automated Test Equipment; Boeing Company, Jim Orlet, 314-233-3306, james.orlet@mw.boeing.com
- Microwave Systems Engineering; MI Technologies, John Detwiler, 321-725-7759, jdetwiler@mi-technologies.com
- Microwave Antenna Repair and Calibration; NESEA St Indigoes, Jim Balon, 301-862-8286; Also NSWC Crane, Billy Clymer, DSN 482-1874
- GSA Telecommunication Support Services; US General Services Administration, www.gsa.gov/Portal/content/offerings_content.jsp?contentOID=120182&contentType=1004

6) **Environmental/Hazmat** – Technologies, practices, procedures, and issues related to industrial maintenance, and which address the handling, collection, treatment, and disposal of hazardous material.

Depot needs for this technology category were:
1 - Insulation Sampling [NAVSEA];
2 - Closed Loop Wastewater Recycling [NAVAIR CP]
3 - Plasma Arc Waste Stream Destruction [MC]
4 - Alternatives to Cadmium Plating [MC]
5 - Fuel Cell Technology [MC] [NAVAIR CP]
6 - Environmentally-Benign Paint Stripping [MC]
7 - Effect of Average Seawater Temperature on Maintenance Cost Submarine Seawater Systems [NAVSEA]
8 - Lead Ballast Handling [NAVSEA]
9 - NA122, VOC Compliant Materials for Fuel Bladder Repair [NAVAIR CP]
10 - Sludge Reduction [NAVAIR CP]
11 - Bio-Degradable Aircraft De-Icing Fluid [AF]
12 - Halon Replacement [USMC]
13 - Welding Fume Emissions Reduction [USMC]
14 - Lead (Pb) Free Soldering [USMC]
15 - Cadmium Alternatives [USMC]
16 - Air Recirculation in Aircraft Paint Hangars and Larger Paint Facilities [AF]
17 - Acoustic Emissions Assessment of Machinery Condition [NAVSEA]
18 - Improved Fueling/Defueling Processes [AF]
19 - High Solids Paint Clean-up [NAVSEA]
Potential Solutions:

- NASA Ames Research Center Aerospace Anti-Icing Project; www.sciencedaily.com/releases/2001/12/011218073836.htm [11]
- Enviro$ense Environmental Solutions; EPA/ORD, Myles Morse, 202-564-6827 morse.myles@epamail.epa.gov [1 - 19]

- 3M Novec 1230 Fire Protection Fluid; 3M Corporation, 888-364-3577, www.mmm.com [2,12]
- Halon Replacement Project #68D00259; National Center for Environmental Research, http://es.epa.gov/ncer/final/sbir/00/pollution/macelwee.html [2,12]
- AFRL Halon Replacement Team [2,12]
- TRIODIDE (CF3I) Second Generation Halon; Orion Safety Industries, 6-129-821-2244, www.orionsafety.com.au/product/triodide/paper2.html [2,12]
- FM-200 & FE-241 Fire Suppression Systems; Nautical Fire Suppression Limited, 705-424-7519, www.nauticalfire.com [2,12]
- Laser Repair Center (#236)
- Edison Welding Institute/Navy Joining Center, Paul Denny, 614-688-5239, paul_denney@ewi.org www.ewi.org/njc [3,16]
- Lead Free Soldering; Faraday Technology Company, Maria Inman, 937-836-7749, inman.faraday@erinet.com [14]
- Lead Free Solder; JG-DM Project #J-01-EM-026; www.jgpp.com [14]
- Cadmium Plating Bath Substitution (#41374) [4,15]
- Replacement of Cadmium Plating with Zinc Plating (#8987) [4,15]
- Zinc Alloy Plating (#56350) [4,15]
- JG-DM Joint Cadmium Alternatives Team; www.jgpp.com [4,15]
- Alternatives for Cadmium on Threaded Parts; JG-DM Project #J-95-MF-003; www.jgpp.com [4,15]
- Air Force Paint Spray Booth Flow Reduction (#55718) [16]
- Corona Destruction Process (#55720) [3]
- EPA Research Triangle Park, Chuck Darwin, www.epa.gov/rtp [1-19]
- Robotic Paint Booths; International Truck and Engine Company, 800-448-7825, www.navistar.com/site_layout/index.asp [16]
- Acoustic Emissions Monitoring; Acoustic Associates Limited; 847-359-1068, www.acousticassociates.com [17]
- Acoustic Solutions; 44-015-246-2711, www.lgfgroup.com/acousticsolutioa.html
- Condition Monitoring for Rotating Machinery; IMES Limited, 909-626-8316 www.waterweights.com/cmihtm.htm [17]
- Condition Monitoring and Machine Protection; Sales Technology Inc, 800-845-3028, www.stiweb.com [17]
- Machinery Vibration and Monitoring; MachineryWatchDotCom, 540-967-3886, www.machinerywatch.com [17]
- Hazardous Material Encapsulation; Norm Stark, Stark Encapsulation, 216-696-2390, normstark@aol.com [3]
- Replacements for Chrome; Sean Krieger, Penn State University, 814-863-0896, slk22@psu.edu [4,15]
- Cadmium Alternatives for Fasteners; Brian Glowacki, Metal Coatings International, 440-285-2231 www.pfonline.com/articles/050203.html Also TACOM, George Shaw, shawg@tacom.army.mil [4,15]
- Thermal Spray Replacement for Hard Chrome; Bruce Sartwell, 202-767-0772, Naval Research Lab, sartwell@nrl.navy.mil [4,15]

- Paint Booth Barstow and Oil Mist Technology; Loren Garner, Bio-Reaction Inc, 888-508-2808, lgardner@bioreaction.com [16]
- Degradable by Design Deicer (D3); Battelle Institute, Nick Conkle, 614-424-5616, conkle@battelle.org [11]
- Removal of Chromium From Wastewater Using ALIX; Battelle Institute, Nick Conkle, 614-424-5616, conkle@battelle.org [2,10]
- Nickel Boron Replacement for Chrome; Universal Chemical Technologies Inc, Chuck McComas, 772-223-6699, www.universalchemical.com [4,15]
- Replacement of Chromated Epoxy Primers; Lockheed-Martin Aerospace, Mark Lindsay, 408-742-4321, www.lockheedmartin.com

7) **Improved Maintenance Practices** – Technologies, practices, or procedures, which have the potential for improving the functional operation of any industrial maintenance process.

Depot needs for this technology category were:

1- Practical methods to predict the magnitude of water-hammer induced pressure surges that could result from disestablishing freeze-seals during submarine maintenance availabilities [NAVSEA]

2 - Predictive techniques for system/subsystem failures [NAVSEA]

3 - Innovations in maintenance processes [NAVSEA]

4 - Depot technology improvements, including funding mechanisms [NAVSEA]

5 - In-place Ball Valve Repair [NAVSEA]

6 - Lead Ballast Handling System Improvement (conveyor belt process) [NAVSEA]

7 - Telemaintenance [USMC] [NAVAIR CP]

8 - Nanotechnology [MC]

Potential Solutions:

- Sean Morgan's Nanotechnology Pages, www.lucifer.com/~sean/Nano.html [2,4,8]
- Interactive Maintenance Aiding System - IMAS (#288) [2,3]
- Industrial Plant Equipment (IPE) Maintenance Advisor (#37907) [3]
- Maintenance Mentoring System; Intelliworxx Inc, 941-378-8822, www.intelliworxx.com/mentorworxx [3,4,7]
- Advanced Integrated Maintenance Support System (AIMSS); Raytheon; 978-8585-5246; www.raytheon.com [2,3,4]
- Advanced Specialty Engineering Networked Toolkit (ASENT); Raytheon; 978-8585-5246; www.raytheon.com [2,3,4]
- Generalized Automated Maintenance Environment (GAME); Raytheon; 978-8585-5246; www.raytheon.com [1,3,5
- Advanced Leak Testing; Ford Motor Company, Dave Gravel, 800-392-3673, www.ford.com [1,3,4]
- Bio-Based Lubricants; DLA/DSCR, Linwood Gillman, DSN 695-3518; lgilman@dscr.dla.mil [2,3]
- Sol-Gel Adhesive Bonding; Boeing Company, Kay Blohouiak, 425-237-4657 [3,4]
- Puradyn Oil Filter Technology; Puradyn Filter Technologies Inc, Kevin Kroger, 561-547-9499, kkroger@puradyn.com Also AFRL, James Mazza, 937-255-7778 [3,4]

- Field Activity Support and Technology Transfer (FASTT); NAVSEA, Robert Vozzella, 207-438-1610; vozzellarc@navsea.navy.mil [1-8]
- Damage and Wear Assessment Using Condition Based Maintenance; NCMS/CTMA Project #140324; www.ncms.org [1,2,3,4]
- Rapid Prototyping for DoD Maintenance Activities; NCMS/CTMA Project #140207; www.ncms.org [3,4]
- Laser Engineered Net Shaping for Commercial and Defense Manufacturing; NCMS/CTMA Project #140209; www.ncms.org [3,4]
- Instruments for Nanoscience; Windsor Scientific Limited, 01-75-382-2522, www.windsor-ltd.co.uk [8]

8) **Laser Applications** – Technologies, practices, or procedures utilizing laser processes in any industrial maintenance application.
Depot needs for this technology category were:
1 - Laser Paint Stripping [USMC]
2 - Laser Engineered Net Shape (NGIS+) [NAVAIR CP]
3 - Laser Engineered Net Shaping [USMC]
Potential Solutions: (all the below are applicable to the needs above)
- Laser Automated Depainting System (LADS) (#37874) [1]
- Lasers for Paint Removal Phase I (#48) [1]
- Laser Technology (#41411) [1-3]
- Joint Paint Removal Study- Laser (JTEG Oct 96) [1]
- Portable Laser Coating Removal System; JG-DM Project #J-00-CR-017; www.jgpp.com [1]
- Rapid Prototype Manufacturing - RPM #(010701) [2,3]
- Laser Machining Center (#359) [2,3]
- Laser Cutting Machine CNC (#354) [2,3]
- Industrial Laser Welding; Edison Welding Institute/Navy Joining Center, Paul Denny, 614-688-5239; paul_denny@ewi.org [2,3]
- Q-Switch Laser Technology; NUWC Keyport, Pat Bergan, 360-396-2706, pbergan@kpt.nuwc.navy.mil [2,3]
- Laser Engineered Net Shaping for Commercial and Defense Manufacturing; NCMS/CTMA Project #140209; www.ncms.org [2,3]

9) **Machining, Metalworking, and Fabrication** – Technologies, practices, or procedures employed in any industrial maintenance application, which involves forming, machining, and fabrication of metallic materials.
Depot needs for this technology category were:
1 - Loft/Foil to CAD Conversion [NAVAIR CP]
2 - Lead/Kirksite Replacement [NAVAIR CP]
3 - Reconfigurable Tooling [NAVAIR CP]
4 - Friction Stir Welding [MC]
5 - SimSkil High Throughput Programming System [NAVAIR CP]
6 - Laser Engineered Net Shaping [USMC]
7 - Structures – Corrosion & Fatigue Cracking [AF]

8 - C-5 Honeycomb Floor Panel Repair and Redesign [AF]
9 - Intelligent Near Net-shape Manufacturing Cell [AF]
10 - Oxy-Fuel Cutting [NAVSEA]
11- Titanium Welding [TACOM]

Potential Solutions:

- Rapid Prototype Manufacturing - RPM #(010701) [6,9]
- Laser Machining Center (#359) [6]
- Laser Cutting Machine CNC (#354) [6]
- Automated Fluorescent Penetrant Inspection System (#298) [7]
- Improved Inspection for Hole Cracking (#260) [8]
- Integrated Blade Inspection System (IBIS (#35) [7]
- Laboratory Precision Immersion Ultrasonic Inspection System (#229) [7, 8]
- Resonant Ultrasound Second Harmonic Inspection - RUSHI (#48532) [7]
- Robotic Non-Destructive Inspection, X-Ray and N-Ray System (#239) [7,8]
- Single-Step Magnetic Particle Inspection (#263) [7,8]
- Ultrasonic C-Scan Inspection System (#302) [7,8]
- Ultrasonic Evaluation of Bonded Structure Repair (#284) [7,8]
- Corrosion Management Expert System (#270) [7,8]
- **I**nstrument for **B**iomolecular **I**nteraction **S**ensing (IBIS); Windsor Scientific Limited, 01-75-382-2522, www.windsor-ltd.co.uk [9]
- Robotic Van Panel Assembly (#9164) [7,8]
- Advanced Composite In-service NDE System (#32) [7,8]
- Composite Repair Center (Advanced Composite Repair Center) (#221) [7,8]
- Composite Repair Facility (#281) [7,8]
- Composite Structures Repair Study (Phase I) (#37) [7,8]
- Composite Structures Repair Study (Phase II) (#38) [7,8]
- National Composite Center [Dayton, Ohio], www.compositecenter.org [7,8]
- Composite Structures; The Nordam Group [Tulsa, OK]; 918-401-5414, www.nordam.com/index.cfm [7,8]
- Composite Structure Repair; Kaman Aerospace [Hartford, CT], 860-243-7100, www.kamanaero.com/aerospace.htm
- Composite Structure Repair; Composites Unlimited [South Irvine, CA], 949- 559-0930, www.compositesunlimited.com [7,8]
- Laminated Composite Structure Repair; TEKLAM Corporation [Corona, CA], 909-278-4563, www.teklam.com/teklam_intro.html [7,8]
- Composite Panel Manufacturing and Repair; Pacific Panels [Oakland, CA], 510-568-7288, www.pacifpanel.qpg.com [7,8]
- Rapid Prototype Manufacturing (RPM) (#010701) [9]
- Petrogen Oxy-Gasoline Cutting Systems; Petrogen Inc, 877-88-888-6724, www.petrogen.com [10]
- Steel America Fabrication and Repair, 757-545-5311, www.steelam.com [7,8]
- Cadet Portable Oxy-Fuel Cutting Equipment; Weld Plus Inc, 800-288-9414 www.weldplus.com/index.htm [10]
- Wire Welding; HR Technology, John Rabinvoich, 978-453-6400 [4,11]
- Buehrer-AG; 41-0-1-844-2550; www.buehrer-ag.ch/en/buehrer-ag.html [7,8]

- High Through Put Machining of 5 Axis Aluminum Components; NCMS/CTMA Project #150337, Tony Hayes, 734-995-4930 [5]
- 3D E-Manufacturing; Extrude Hone, Ralph Resnick, 800-362-1109 [7,8]
- Rapid Product Development; POM Company, 248-409-7900 www.pom.net [6,9]
- Rapid Prototyping for DoD Maintenance Activities; NCMS/CTMA Project #140207; www.ncms.org [6,9]
- Laser Engineered Net Shaping for Commercial and Defense Manufacturing; NCMS/CTMA Project #140209; www.ncms.org [6,9]
- Near Dry Machine Tools for Production of Aluminum Components; NCMS/CTMA Project #150320; www.ncms.org [6,9]
- Post EDM Surface Finishing; Faraday Technology Company, Maria Inman, 937-836-7749, inman.faraday@erinet.com
- Inconel 718 Production Part Deburring; Faraday Technology Company, Maria Inman, 937-836-7749, inman.faraday@erinet.com
- Helicopter Wheel Deburring; Faraday Technology Company, Maria Inman, 937-836-7749, inman.faraday@erinet.com
- Stainless Steel Valve Deburring; Faraday Technology Company, Maria Inman, 937-836-7749, inman.faraday@erinet.com
- Laser Beam Cutting and Welding; Laser Fusion; 805-529-WELD (9353); www.laserfusionwelding.com/?src=overture [11]
- Titanium Fabrication Corp; 973-227-5300; www.tifab.com/index.htm
- Titanium Products and Services; Titanium Metals Corporation (TIMET); 303-296-5600; www.timet.com/index.html [11]
- Edison Welding Institute / Navy Jointing Center; Paul Denny; 614-688-5239; paul_denney@ewi.org www.ewi.org [11]

10) Plating – Technologies, practices, or procedures utilized in the plating, cladding, or deposition of metallic materials on surfaces.

Depot needs for this technology category were:

1 - Erosion Resistant Coatings [NAVAIR CP]

2 - Hexavalent Chrome Replacement [NAVAIR CP]

3 - Cadmium Alternatives [USMC]

Potential Solutions: (all the below are applicable to the needs above)

- NAVAIR Foreign Comparative Testing (FCT) Project for Russian Coatings; George Barnett, NAVAIR, barnettgw@navair.navy.mil [1]
- Cadmium Plating Bath Substitution (#41374) [3]
- Replacement of Cadmium Plating with Zinc Plating (#8987) [3]
- Zinc Alloy Plating (#56350) [2,3]
- Uniquecoat Technologies; 804-798-0045; www.uniquecoat.com [1,2,3]
- Cadmium Alternatives for Fasteners (#020303) [3]
- Challenge, Inc; *317-875-5068,* hwww.ippmagazine.com/articles/2001/march/0301f1.htm [1,2,3]
- Alumi-Plate Alternative to Cad/Chrome; DLA/DSCR, Linwood Gillman, DSN 695-3518; lgilman@dscr.dla.mil [2,3]
- JG-DM Joint Cadmium Alternatives Team; www.jgpp.com [2,3]

- Alternatives to Electrodeposited Cadmium; JG-DM Project #J-95-MF-006; www.jgpp.com [2,3]
- Thermal Spray Replacement for Hard Chrome; Naval Research Lab, Bruce Sartwell, 202-767-0772, sartwell@nrl.navy.mil [2]
- Replacements for Chrome; Penn State University, Sean Krieger, 814-863-0896, slk22@psu.edu [2]
- Cadmium Alternatives for Fasteners; Metal Coatings International, Brian Glowacki, 440-285-2231 [3]
- Buehrer-AG; 41-0-1-844-2550; www.buehrer-ag.ch/en/buehrer-ag.html [1,2,3]
- Nickel Boron Replacement for Chrome; Universal Chemical Technologies Inc, Chuck McComas, 772-223-6699, www.universalchemical.com [2]
- Electrodesposition of Platinum Catalyst; Faraday Technology Company, Maria Inman, 937-836-7749, inman.faraday@erinet.com [1,2,3]
- Sequential Copper Plating for HDI Applications; Faraday Technology Company, Maria Inman, 937-836-7749, inman.faraday@erinet.com [2,3]

11) Quality and Inspection Processes – Systems, practices, or procedures, which can improve quality or inspection applications for industrial maintenance operations.

Depot needs for this technology category were:

1 - Next Generation Inspection Systems [NAVAIR CP]
2 - Aging Aircraft Requirements / Aging Wiring Inspections [AF]
3 - FOD Identification and Collection Process [AF]

Potential Solutions: (all the below are applicable to the needs above)

- Enhanced Wiring Integrity System; NCMS/CTMA Project # 140328 [1,2]
- Methods to Detect Wiring Problems; Air Force Research Lab Project [1,2]
- The Shields Company, www.airportfodmagnets.com [3]
- The FOD Control Corporation, www.fodcontrol.com [3]
- Joint Council on Aging Aircraft; www.agingsystems.alionscience.com [1,2]
- DoD Sustainment and Readiness Subpanel; Air Force Research Lab, David See, 937- 904-4387, www.dodmantech.com/invest/Sustainment/index.shtml [1,2]
- Nova Wiring Integrity System; Honeywell International Inc, Mike Mitchell; 602-365-4134; michael.mitchell@honeywell.com [1,2]
- Next Generation Inspection System; NCMS/CTMA Project # 150501; www.ncms.org [1,2]

12) Surface Finishing – Technologies, practices, or procedures utilized in the application of non-metallic coatings to surfaces and the chemical and blast pretreatment of surfaces prior to coating applications.

Depot needs for this technology category were:

1 - Inorganic Non-Skid Coatings Application Improvement [NAVSEA]
2 - Non-chromic Anodize Process [NAVAIR CP]
3 - Powder Painting [NAVAIR CP]
4 - NA121-99: HAP/VOC Reduction [NAVAIR CP]
5 - NA116-99: Al2O3 Blast Media Reduction or Elimination [NAVAIR CP]
6 - Chrome Reduction Technology; Sermetel W Replacement [NAVAIR CP]

7 - Erosion Resistant Coating [NAVAIR CP]
8 - Environmentally-Benign Surface Preparations and Coatings [MC]
9 - Powder Coat Touch Up [NAVSEA]
10 - Sea Growth Prevention (anti-fouling) [NAVSEA]
11 - Concrete Sealant & IR the Runway [AF]
12 - Testing Capability to Verify/Validate Low Observable (LO) Topcoat
13 - Reduced Cure Time of Primers and Topcoats [AF]
14 - Non-Chromated Primer [AF]

Potential Solutions:

- Advanced Coatings and Sealants; J&R Industries (Los Angeles, CA), 310-476-7121, www.jandrindustries.com [1,2,3,6,7,8,9,10,11,14]
- Concrete Sealing and Waterproofing; Endur-O-Seal USA [Pinehurst, TX]; 800-342-9202, www.bricksealer.com [11]
- Aviation Coatings; Dur-A-Shield, 800-742-5877, www.aircraftcoatings.com [13,14]
- **I**nstrument for **B**iomolecular **I**nteraction **S**ensing (IBIS); Windsor Scientific Limited, 01-75-382-2522, www.windsor-ltd.co.uk
- Titanium Surface Finishing; John Rabinvoich, HR Technology, 978-453-6400 [7,14]
- Non-Chromate Aluminum Pretreatments; JG-DM Project #S-00-OC-016; www.jgpp.com [2,8,14]
- Chromium Free Primers for Inserts and Fasteners; JG-DM Project #J-95-MF-003; www.jgpp.com [6,14]
- Chromate Free Conversion Coating; JG-DM Project #J-95-OC-001; www.jgpp.com [6,14]
- Chromate Free Primer and Sealants; JG-DM Data Resource; www.jgpp.com [6,14]
- Plural Component Paint Dispensing System; NAVAIR, Mike Romanelli, 904-542-0516, romanellimt@navair.navy.mil [14]
- Urethane Technology; SynAir Corporation, 800-251-7642, www.synair.com [3,6,13,14]
- Paintless Aircraft Technology; Lockheed-Martin Aerospace, Joe Stout, 817-763-4086, www.lmtas.com/news/gen_news/business/bnipr_97/bnipr970717.html
- GSA Air Spray Equipment; Fluid-Air Products, Bob Hunt, 314-729-7000, www.fluidair.com
- Direct to Metal Primerless Topcoat; NSWC Carderock, Norman Clayton, 215-897-8435, claytonnj@nswccd.navy.mil [8]
- Barrier Coating Technology; Battelle Institute, John Stropki, 614-424-5415, stripki@battelle.org Also WR-ALC, Richard Slife, 478-926-1197, richard.slife@robins.af.mil
- Fretting-Resistant Nanocomposite Coatings, Western Michigan University, Mechanical Engineering, Daniel Kujawski, 269- 387-1000
- Thermal Spray Coatings Booth; NCMS/CTMA Project #140311
- TI6A14V Surface Finishing; Faraday Technology Company, Maria Inman, 937-836-7749, inman.faraday@erinet.com [8]

- UNICARB Spray Coating System; Union Carbide Corporation, Wayne Miller, 203-794-2000, www.p2library.nfesc.navy.mil/P2_Opportunity_Handbook/5_17.html
- Thermoplastic Powder Coatings; Union Carbide Corporation, 203-794-2000 www.dow.com/products_services/industry/paints.htm [8,3]
- Powder Coating Equipment and Processes, Hughes Missile Systems Company, Larry Brown, 602-794-7554
- Thermoplastic Powder Coatings and Equipment; Air Force Research Lab, Dave Ellicks, (DSN) 468-3284, david.ellicks@robins.af.mil [3,8]
- Evodex Ultraviolet Resistant Powder Coatings; SprayTech Systems Inc, David Grafflin, 800-777-7729 [3,8]
- Spray Gun Transfer Efficiency, Pacific North West Pollution Prevention Center, Madeline Grulich, 206-233-1151
- Low VOC Coatings for Aerospace; Boeing Company, Terry Leland, 206-234-3952 [8]
- Spred 2000 Zero VOC Coatings; Glidden Company, David Maurer, 216-344-8664
- Metal Coating Systems; Hawking International Limited, Peter Ryder, 44-121-585--6263, www.hawking.co.uk/oldindex.html
- Ultraviolet and Electron Beam Curing for Polymeric Materials; Fusion UV Curing Systems, Richard Stowe, 301-527-2660, www.fusionuv.com

13) Test and Evaluation – Systems, practices, or procedures, which can be utilized to determine the value and function of any industrial maintenance operation or process.

Depot needs for this technology category were:

1 - Non-Destructive Testing (thermal imaging, microwave, ultrasonics, etc.) [MC]
2 - Universal Antenna Testing Facility [NAVSEA]
3 - Near Field Measurement Techniques [NAVSEA]
4 - Non-Destructive Testing Equipment [USMC]
5 - Welding Deficiency Detection [USMC]
6 - Portable Miniaturized Residual Stress Measurement System [AF]
7 - Test Program Set (TPS) for B-1B Flight Control Line Replaceable Units (LRUs) Chassis [AF]
8 - Weapon System Avionics Component Tester (B-1) [AF]

Potential Solutions:

- Advanced Testing Technologies, www.attinet.com [1– 8]
- Automated Fluorescent Penetrant Inspection System (#298) [1,2,3,4,5,6]
- Laboratory Precision Immersion Ultrasonic Inspection System (#229) [1,3,6]
- Resonant Ultrasound Second Harmonic Inspection - RUSHI (#48532) [1,3,6]
- Robotic Non-Destructive Inspection, X-Ray and N-Ray System (#239)
- Ultrasonic C-Scan Inspection System (#302) [1,3,6]
- Ultrasonic Evaluation of Bonded Structure Repair (#284) [1,3,6]
- Disk Surface Eddy Current Inspection System (#31) [1,3,4]
- Improved Inspection for Hole Cracking (#260) [1,3,4]
- Integrated Blade Inspection System - IBIS (#35) [1]

- Single-Step Magnetic Particle Inspection (#263) [1,3,4]
- Modular Automatic Test Equipment Software Support/Development System (#204) [7,8]
- Artificial Neural Test Station - ANTS (#37866)
- Automatic Test Equipment Software Support Environment (#206) [7,8]
- Legacy Automated Test Equipment; Boeing Company, Jim Orlet, 314-233-3306, james.orlet@mw.boeing.com [1-8]
- Generalized Automated Maintenance Environment (GAME); Raytheon; 978-8585-5246; www.raytheon.com
- Non-destructive Testing Information Analysis Center (NTIAC); DOD, 800-684-2239, www.ntiac.com [1,3,4,5,6]
- PIPA Method for NDI; Positron Systems Inc, Doug Akers; 208-520-6269, douga@positronsystems.com [1,3,4,5,6]