Issue #01

CTMA

Commercial Technologies for Maintenance Activities

MAY 2013

this meeting

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Annual Partners Meeting

Fast Track Collaboration

Deputy Commanders Panel
On the front lines of weapon systems
Technology Highlights Sessions
20 minute sessions with the latest technology
Joint Technology Exchange Group Panel
JTEG - a forum for new technology exchange

COMMERCIAL TECHNOLOGIES for MAINTENANCE ACTIVITIES
NCMS • DoD
CTMA

2013

CTMA is a partnership between National Center for Manufacturing Sciences and the Department of Defense

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The CTMA program is a joint Department of Defense/National Center for Manufacturing Sciences effort promoting collaborative technology development between industry and the DoD maintenance and repair facilities.

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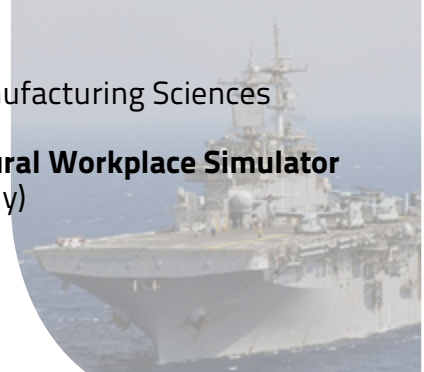

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2013

Biography

Biography

1230-1300

Partners Meeting Opening Remarks

By Tony Haynes
& Greg Kilchenstein

VIEW SLIDE DECK

PLAY PRESENTATION

NCMS CTMA Partners Meeting Participants:

The National Center for Manufacturing Sciences and the Department of Defense, Maintenance Policy & Programs would like to welcome you to the 2013 CTMA Partners Meeting. This year, given the travel restrictions facing DoD, we are trying a new approach: a combination virtual and live event over a three day period. For our Partners able to travel, we have invited them to NCMS Headquarters in Ann Arbor during the Partners Meeting to showcase their technologies, and network with others. For all others, we are connecting live via video-conferencing and through webstreaming. In addition, the Partners Meeting is being recorded for future viewing.

This virtual event features DoD Senior Leaders in weapon system sustainment outlining their technical needs for maintaining readiness under severe budgetary restraints. We are hosting a panel consisting of Depot Deputy Commanders sharing the issues they are facing and where technologies are needed to improve readiness and reliability at reduced costs. A second panel will consist of members of the DoD's Joint Technology Exchange Group (JTEG), where Service representatives will present key technology insertion actions they are conducting as well as review their overall technology needs with respect to maintaining and upgrading depot maintenance capabilities.

Several CTMA technology projects will be demonstrated during the second and third days, and our aim is to reach a broader audience of end-users, both government and industry, for deployment of the developed technology. Included are highlights from this year's Maintenance Technology Challenge, with a briefing by the winning team.

The directors of DoD's SERDP/ESTCP Program and the Corrosion Prevention and Control Program will present their efforts and opportunities to engage with those programs.

Through the CTMA cooperative agreement with the Office of the Secretary of Defense, NCMS forms and manages timely collaborative R&D projects that address the needs of the maintainers. Over the past 14 years, the CTMA program has successfully demonstrated the ability to manage technologies at lower cost, and has an unparalleled track record for deploying technology within DoD maintenance facilities and within industry.

Thank you for your participation in the 2013 CTMA Partners Meeting and our continuing interactions.

Commercial Technologies for Maintenance Activities

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Rebecca Taylor

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FACILITIES MANAGER
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DIRECTOR OF STRATEGIC PROJECTS
Phil Callihan

GLOBAL BRAND MANAGER
Matthew Sakey

LAN/WAN ADMINISTRATOR
Andrew Green

ACCOUNTING
Susan Mills
Debbie Howay

CONTRACTS
Beth Bolog

The lifesaving CTMA program is a DoD-supported initiative that ensures American troops and their equipment are ready to face any situation, with the most up-to-date and best-maintained platforms and tools on earth.

Under CTMA, NCMS forms collaborative partnerships between the DoD and private industry to enhance the readiness of our warfighters by providing new and innovative sustainment solutions and research on existing or legacy weapons platforms. Our primary role within CTMA is to facilitate technology development, deployment and validation for use with the DoD's sustainment activities and at NCMS member companies. NCMS forms and manages the project teams to ensure compliance with CTMA guidelines and requirements. By combining North American manufacturing ingenuity with military needs, CTMA projects get critical tools and solutions into the hands of the warfighters without the added cost and reinvention that would be necessary in a non-collaborative model.

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Heidi Hottenger

MEETING COORDINATOR
Melissa Sullivan

ADMINISTRATIVE ASSISTANT
Anita Tolen

ART DIRECTOR
Christopher Fick

NCMS fuels innovative solutions for manufacturers. A nonprofit, member-based consortium, the organization's objective is to drive the global competitiveness of North American manufacturers through collaboration, innovation, and advanced technologies.

If you are interested in learning more or becoming a member, please visit us at www.NCMS.org

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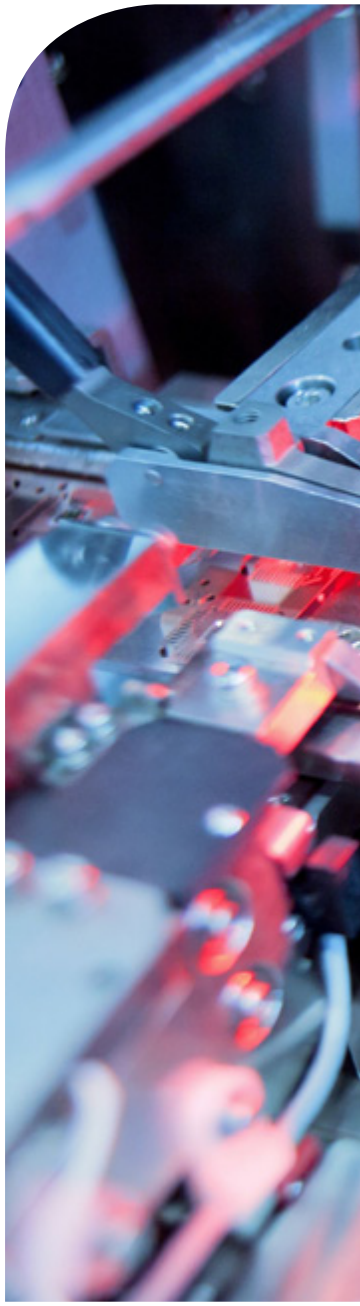
NATIONAL CENTER FOR MANUFACTURING SCIENCES



1300 -1315

Industry Perspective

BY RICK JARMAN,
PRESIDENT & CEO, NCMS

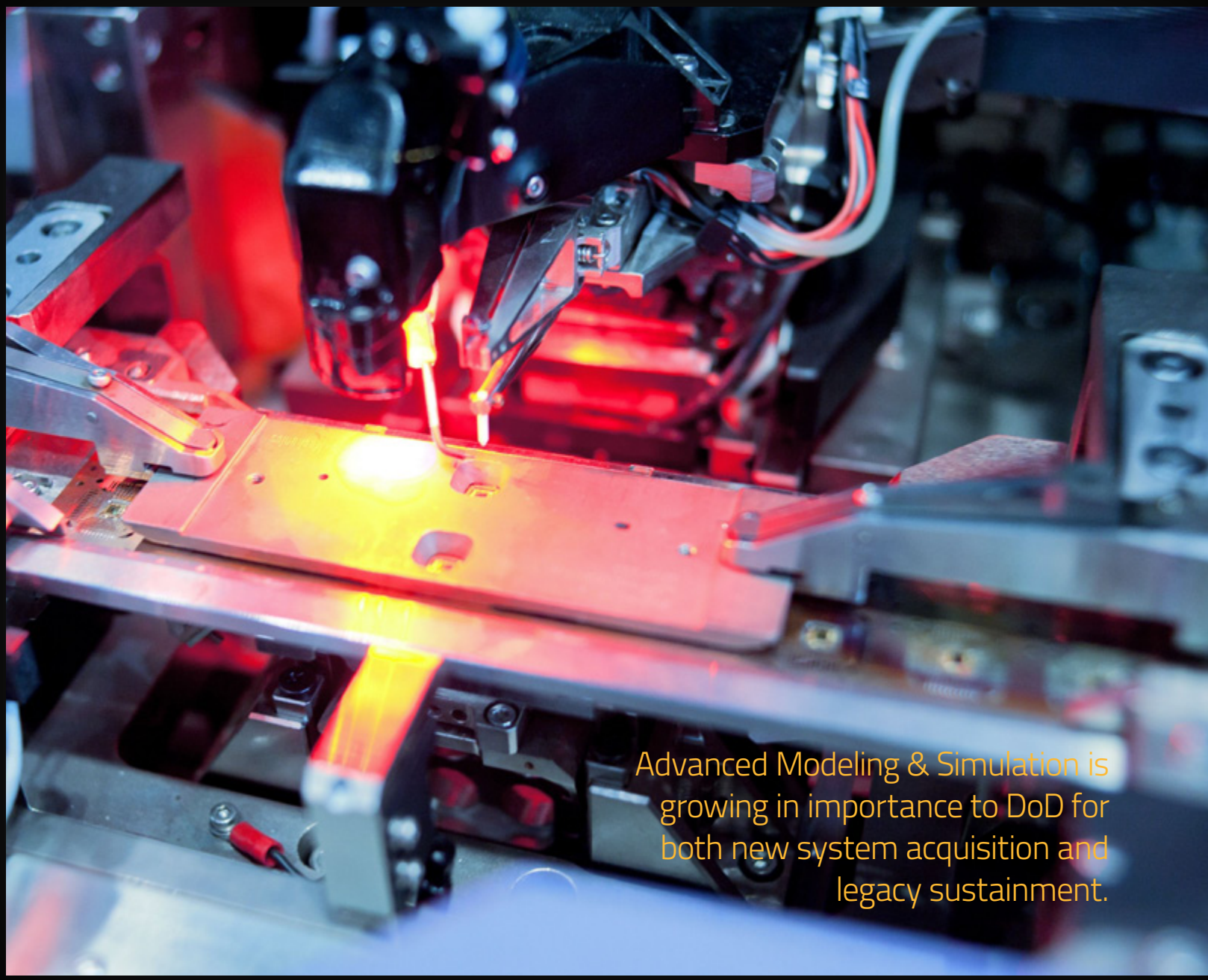
Biography

PLAY PRESENTATION

Welcome to the 2013 CTMA Partners Meeting. This virtual meeting format, with industry partners meeting and presenting live here in Ann Arbor and our defense partners participating live via DoD's VTC capability, is driven by defense budget reductions that forced total curtailment of travel. Someone once said necessity is the mother of invention, and although we didn't invent the necessary technology, we are certainly applying it in an innovative way. NCMS is fully committed to make the format work to the benefit of all.

Since 1998 the CTMA program has proven its value to both NCMS and DoD. CTMA is the only major program with a relentless focus on defense sustainment. Industry benefits from technology development and subsequent sales. All parties benefit from events such as this one via the networking opportunities that enable bi-directional problem/solution flow between defense and industry. As you know, the CTMA program has for the past seven years been funded through direct service funding through MIPRs to the CTMA award. Budget reductions render that scenario more difficult but it is important to all that direct funding continue because budget reductions also mean that legacy weapons must be sustained even longer.

The NCMS collaborative R&D model has proven its worth in this environment, sharing risk, reducing development time, building stronger linkage between user requirements and technology capabilities, and demonstrating proven solutions. NCMS' reputation as a trusted neutral broker is an essential element in the formation and management of collaborations. NCMS is a one stop shop for all the necessary administrative functions of contracting,



contract administration, accounting, and collaborative project management.

Advanced Modeling & Simulation is growing in importance to DoD for both new system acquisition and legacy sustainment. NCMS is at the forefront of that cutting edge technology with collaboration centers in Michigan and Virginia and with more planned. NCMS is also active in other leading edge technologies such as Additive Manufacturing and Sustainable Manufacturing. Please visit our website for insight into the full depth and breadth of our capabilities.

Thank you for attending.

Rick Jarman
Priesident & CEO, NCMS

DoD Readiness Sustainment Challenge

John Johns, *Deputy Assistant Secretary of Defense for Maintenance, Office of the Secretary of Defense*

1315-1335

Mr. Johns is Deputy Assistant Secretary of Defense for Maintenance. In this position, he is responsible for oversight of the Department's annual $90 billion maintenance program.

Biography

As the national security environment continues to evolve in the midst of unprecedented budget constraints, collaborative programs such as CTMA are more imperative than ever to maintain U.S. military readiness. The demand for increased flexibility and agility has placed extraordinary challenges in the hands of the Depots and maintainers. New and legacy weapon systems bear ever-increasing sustainment costs, and the Department of Defense has a responsibility to maintain its platforms regardless of financial constrictions. In the coming months and years, the DoD will become more and more dependent on industry and integrated workforce, creating a new set of Mx challenges. Ensuring the industry-government relationship is essential to the lifecycle of our defense systems, and collaborative partnerships such as CTMA will prove mutually beneficial for the Defense Mx community and private industry. By collaborating through proven activities, all parties will be able to maximize the available budget, drive innovation throughout the Mx community, and ensure the ongoing readiness of America's defense assets.

PLAY PRESENTATION **VIEW SLIDE DECK**

NAVSEA Technology Perspective

1335-1355

Rear Admiral Mark R. Whitney, *Deputy Commander, Logistics, Maintenance and Industrial Operations Naval Sea Systems Command*

RDML Whitney will speak to the importance of technology and innovation, specifically focusing on 1) ship design, construction and maintenance; 2) logistics planning and process management and 3) information technology. Each of these 3 domains provide the potential to realize increased efficiencies, quality and worker safety. RDML Whitney will discuss the current state of technology and innovation in the shipyard (e.g., 3-D modeling in the design of ships and the use of modular construction), existing plans to bring the shipyard into the 21st century (e.g., eTWD) and the future of technology and innovation (e.g., the implementation of exoskeletons to assist in ship construction and maintenance).

PLAY PRESENTATION

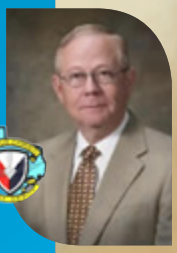
Rear Admiral Mark R. Whitney is a native of South Portland, Maine. He entered the Navy through the Naval Reserve Officers Training Corps program at Maine Maritime Academy where he received a Bachelor of Science degree in Marine Engineering in 1984.

Biography

Deputy Commanders Panel

1415-1435

Panel Members



Bill Braddy
Deputy Commander
Corpus Christi Army Depot

Trent Blalock
Deputy Commander
Marine Depot Maintenance Command

Col. Thomas Miller
Deputy Commander for Maintenance
Ogden Air Logistics Center

Col. Blayne H. Spratlin
Commanding Officer
Fleet Readiness Center East

Steve Morani
Joint Staff J-4
Logistics Directorate

Click on photos to view full biography

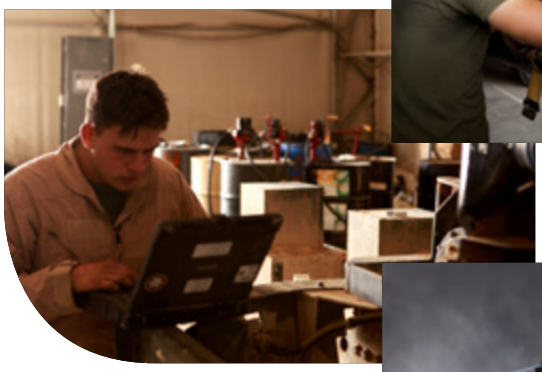
Frank Zardecki,
Deputy Commander,
Tobyhanna Army Depot

PLAY PRESENTATION VIEW SLIDE DECK

Panel Moderator

As the DoD budgetary constraints deepen, their Maintenance Facilities are under increasing pressures to sustain the fleet at less cost, and with higher reliability and readiness. Panel members are on the front lines of weapon systems sustainment and will discuss how emerging technology could provide their operations and outlines their technology needs.

Q&A



The **Conferences** *@ NCMS*

Welcome and Networking Reception

1700-1900

NCMS will be hosting a Welcome and Networking Reception for all of the attendees and participants who made it to Ann Arbor.

A big thank you goes out to all of the CTMA partners. Without you none of this would be possible.

THANK YOU ALL !

For more information about booking or leasing office space, please contact Mark Carver @ (734) 995-3049 or MarkC@ncms.org

CTMA Basics Review

Debra Lilu,
Sr. Program Manager,
National Center For Manufacturing Sciences

0900-0920

The second day of the CTMA Annual Partners meeting is focused on the various technologies that will be demonstrated during 30 minute intervals. The technology briefs are scheduled for 20 minutes with 10 minutes for questions and answers.

Questions during the briefs can be sent to the posted email address. All questions raised during the technology briefs will be answered by the technology providers and will be posted on the online program.

The CTMA program is collaborative program and NCMS works as the conduit between the technology service providers and the government sponsors that have the vital needs.

A CTMA overview will commence with a review of the OSD/NCMS Cooperative Agreement, administrative and cost principles. The initiative formation process will be discussed in detail and will include the elements of a concept paper and MIPR issuance process. An important component of the CTMA program is cost share.

This is a mandatory requirement to ensure all parties have a vested interest in the proposed initiative. NCMS and OSD have diligently worked to streamline the initiative formation and execution process. This process is efficient, disciplined and is compliant with policy and statute.

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Collaborate to Innovate

Rapid Transition of Proven Technologies

Proven successful technology transition

Allows the "try it before you buy it" model

Technology tailored to the Depot's needs

Streamlined process executed within months of MIPR

Leverage cost share and other contributions for Depot CIP funds

COMMERCIAL TECHNOLOGIES for MAINTENANCE ACTIVITIES
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0920 - 0950

Virtual Workplace Simulator - Improving Results in Maintenance Operations

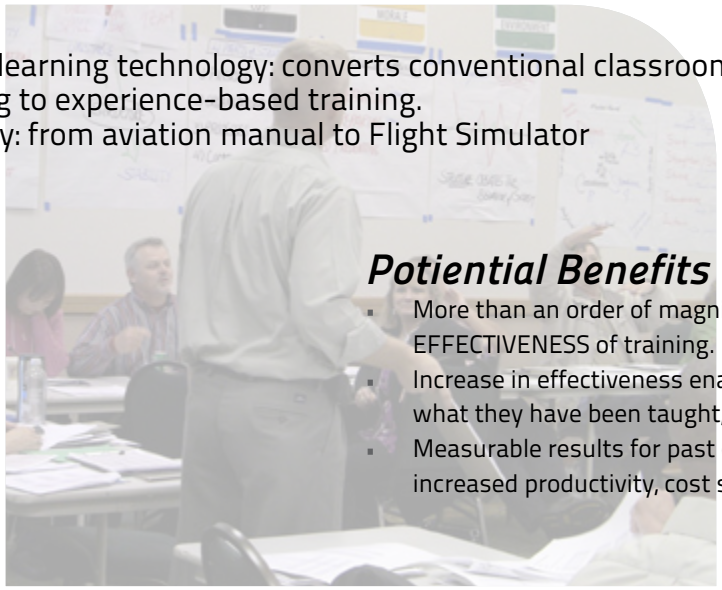
Chip McDaniel, Pendaran, Inc.

A new learning technology: converts conventional classroom training to experience-based training.
Analogy: from aviation manual to Flight Simulator

pendaran

Potiential Benefits

- More than an order of magnitude improvement in EFFECTIVENESS of training.
- Increase in effectiveness enables participants to actually use what they have been taught, in the workplace.
- Measurable results for past clients include 200% ROI through increased productivity, cost savings and waste reduction.



Currently in Use:

- Fleet Readiness Center – East (FRC-E), MCAS at Cherry Point, NC
- Private industry

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Pendaran, Inc.
44784 Helm Street,
Plymouth, MI 48170

Pendaran Method: Accelerated Experience

The current approach to training produces very limited results. We learn by experience. We learn by practicing. Yet traditional training offers little opportunity for risk-free practice. Effective learning is achieved through accelerated experience, not just Powerpoint slides.

Pilots do not hone their skills by reading the manual. From 1940 to 1990, the percentage of aviation accidents due to pilot error remained steady at about 65%. After introduction of a realistic flight simulator, that percentage dropped to less than 30% and has continued to decline. Prior to the introduction of the flight simulator, pilots had the body of knowledge but no opportunity to safely practice applying that knowledge. The flight simulator changed that with accelerated experience.

Accelerated Experience for Organizations:
A flight simulator in organizational settings allows for teaching, practicing, making mistakes, crashing and learning in a risk free environment. Pendaran has developed a flight simulator for organizations and a new method for learning. The Pendaran Method has four distinct parts Class Learning, Work Simulator, Debrief, and Improvement planning, integrated as a system. Participants face realistic scenarios that require action on their part. Results are immediately debriefed. Participants develop action plans to improve performance based on class learning and try again. While the original flight simulator is designed for singular interaction between a pilot and his aircraft, the Pendaran simulator trains employees at all levels of the organization in the context of the system. The individual contributor, senior manager and all levels between experience the system together. At each round of the simulation, complexity increases through new interventions. Participants complete the course having practiced and applied learning.

Effectiveness over Time:
The traditional method of teaching provides some awareness and knowledge on a particular subject. It's difficult to translate into action when it is needed. Unused, it will decay and be lost. The Pendaran Method immediately translates awareness and knowledge into action. Repeated cycles of this flight simulator style experience result in sustained learning at a much deeper level. This also prepares learners to use the new knowledge in their workplace immediately, further reinforcing understanding of the subject and its long-term retention.

About the presenter: Chip McDaniel joined Pendaran in 2011 as VP of Operations and Strategy. Chip is an experienced leader with a record of leading teams in delivering high-impact results in operations-intensive industries. He is passionate about addressing three critical questions at the intersection of strategy, operations and team management:

1. What is the right combination of assets to meet the business strategy?
2. How should we operate those assets to get the maximum contribution?
3. How do we build and sustain the best set of team skills and capabilities to realize that contribution?

pendaran

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1050 - 1120

Product Life Cycle Management

for Aircraft Sustainment and Support

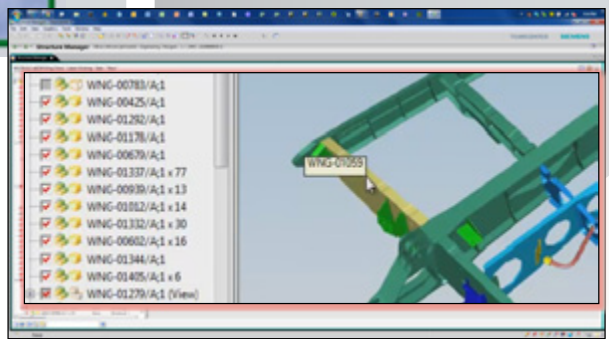
Randy Langmead, Siemens PLM Software

SIEMENS

Benefits of PLM for Aircraft Sustainment and Support

- Enables 3D functionality across FRC-Southwest
- Configuration Management of 3D Solid Model Data
- Production is enabled to perform existing tasks directly accessing Engineering 3D data and related systems
- Manufacturing can directly access and fabricate parts that are fully solid model-based and with live configuration management control
- Fully validated 3D solid model piece parts from the 3MS system
- 3D data directly, electronically available to manufacturing
- Engineering, Production, and Manufacturing
- Enabling more efficient and effective fleet support with 3D solid model-based defined platforms

<u>Teamcenter Presence</u>
Aerospace Structures
Aerospace Engines
U.S. Naval Shipbuilding
Automotive
Heavy Machinery
Consumer Products Medical



PLAY PRESENTATION

Siemens PLM Software
5800 Granite Parkway, Suite 600
Plano, TX 75024

About the presenter: Randy Langmead is Director of Business Development for Siemens PLM Software's Marine/Federal Division. He has been involved with the PLM NeXt project at Newport News, the IPDE at Electric Boat, and the DDG-1000 IDE at Ingalls Shipbuilding since their inception. He leads a team that supports Army, Air Force, Navy, Marine Corps, NASA, and Federal Agency interests in Lifecycle Management.

Randy has been with Siemens PLM Software since 1997. He was EAI's Executive Program Manager for Aerospace and Federal Services, and managed EDS PLM Federal business development. Before that he was a business process consultant with Intergraph Federal Systems, and led a team deploying a PDM solution for JLSC at Wright Patterson Air Force Base.

Randy received a BS in Aerospace Engineering from the United States Naval Academy in 1980, and an MS in Aeronautical Avionics from the Naval Postgraduate School in 1988. A former Naval Aviator, Randy served as a carrier-based ASW Helicopter pilot and held a wide variety of O-Level Aircraft Maintenance positions. He managed a DPMA for LPH-7 at Metro Machine shipyard, and retired from NAVAIR as APM for Test and Evaluation for PEO(A).

SIEMENS

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1020- 1050

Collective Mind – Avoidance of Maintenance Cost through Predictive Trending

Artur Dubrawski, Carnegie Mellon University

Collective Mind is a unique analytic technology that integrates:

- Multivariate "Big Data" mining
- Predictive analytics
- Interactive visualization of trends and patterns

Scales to large amounts of noisy data routinely collected in Operations and Maintenance.
Supports proactive approach to managing health of fleets of equipment.

Key capabilities:

- Early warnings of emerging crises
  - Fleet-wide: Comprehensive monitoring of data for new drivers of demand
  - Item-level: Detection of "Bad Actors"
- Data fusion
- Explanation of patterns and trends
- Prediction of future events.

Collective Mind has been successfully validated in the U.S. Air Force (primarily with the F-16 jet fighter fleet).
It is being developed further and transitioned to practice in the U.S. Navy Aviation (V-22 Osprey).
Applications outside of the military and beyond equipment health management are underway, Automotive, Health Informatics, Law Enforcement, Homeland Security, Finance, …

Dimensions of impact:

- Cost avoidance
  - e.g. avoided exchanges of parts
- Improved readiness and equipment availability
- Better visibility of issues
- Reduction of analytic efforts
- "Doing more without more"
- Very little cleaning of data required
- Easy transfer to new platforms

Example of quantified task:
Avoided Cost of Part Exchanges (F-16 program): Attainable savings in excess of $100M p.a. using just one CM capability ("Bad Actors") Potential additional applicability: Foundational capability can be scaled to many other usage scenarios involving large amounts of multi-dimensional, multi-stream data (e.g. logistics and supply, contracting and acquisitions, engineering, enterprise knowledge and training).

PLAY PRESENTATION

VIEW SLIDE DECK

Heinz College Carnegie Mellon University
5000 Forbes Avenue, NSH 3121
Pittsburgh, PA 15213

Enabling Proactive Management of Equipment Health

Motivation

Unexpected systematic maintenance crises are common

- Of out-of-spec parts
- New mission/theater
- Ill-conceived maintenance procedure
- Inexperienced personnel
- …

Early detection is the key to Proactive Management

- Currently, leading indicators are used to reactively survey the status of fleet
- Physics-based models in place today are used to track known problems

Ideal capability:

- Fast and reliable detection of unexpected issues
- No false alarms
- Never missing anything important

Example of Collective Mind utility:

F-16 Health-of-Fleet reports Systematic failures identified earlier

F-16 Onboard Oxygen Generating System Concentrator

Collective Mind Massive Screening produced an early warning that the component was experiencing significant supply issues; base was forced to cannibalize to meet mission requirements.

Issues previously undetected

- F-16 Digital Electronic
- Engine Control Unit

Pre-existing process would NOT have driven F-16 SCM to this item. Problems continued intermittently for a year.

Quantified Task: Avoided Cost of Part Exchanges

F-16 : Return from 3 Collective Mind capabilities against a subset of items analyzed: $6.5M p.a.

Expected return once fully deployed: $18.0M p.a.

Current F-16 estimate from just one Collective Mind capability: >$100M p.a.

About the presenter: Artur Dubrawski Ph.D. in Robotics and Automation, M.Eng. in Aircraft Engineering, hi-tech industrial experience, 20 years of R&D at the intersection of academia and real world applications of intelligent systems. Director of the Auton Lab, Senior Scientist at the Robotics Institute, Carnegie Mellon University. Leads fundamental and applied research in machine learning and statistical data mining. Teaches graduate courses on these topics. Transfer useful advanced analytics technology from academia to societally important areas of human activity. Build and deploy intelligent systems that work, are useful, and make economic sense.

Carnegie Mellon University

Contact Information
412-268-6233 | awd@cs.cmu.edu | www.autonlab.org

0950 - 1020

Erosion/Corrosion Resistant Coating for Gas Turbine Engine Systems

Simon Durhham, MDS Coating Technologies

MDS COATING TECHNOLOGIES CORPORATION

2007 Winner:
Harry T. Jenson Award – Recognizes the outstanding contribution to improvement of helicopter reliability, maintainability and/or safety through improved design

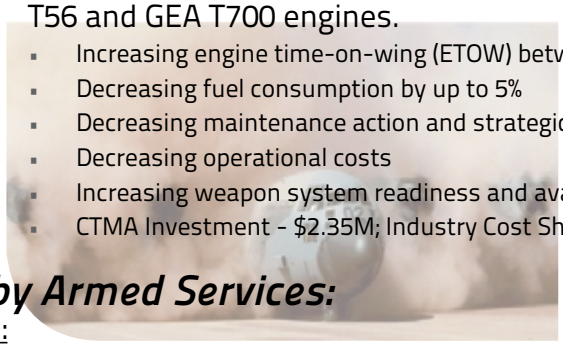
Protective coatings...

- Increase engine time-on-wing
- Reduce maintenance requirements
- Decrease operational costs
- Decrease fuel consumption

Several U.S. Military aircraft operate in both sand and salt environments resulting in both erosion and corrosion of gas turbine engine compressor airfoils.

Application of MDS Coating Technologies (MCT) erosion/corrosion resistant coating system for gas turbine engine operations in both desert and maritime environments such as Honeywell, T55, Rolls Royce T56 and GEA T700 engines.

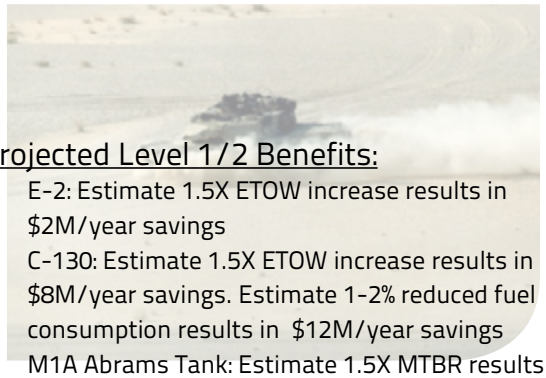
- Increasing engine time-on-wing (ETOW) between 1.5X and 2X
- Decreasing fuel consumption by up to 5%
- Decreasing maintenance action and strategic materials required
- Decreasing operational costs
- Increasing weapon system readiness and availability
- CTMA Investment - $2.35M; Industry Cost Share - $2.5M



Application by Armed Services:

CTMA Sponsored:

- The Technology Application Program office (TAPO), H47 Program Manager evaluating coating for T55 engine
- NAVAIR evaluating coatings for E2, P3, and C2 aircraft on T56 engines
- Tinker AFB evaluating the coating for C130 aircraft on T56 engine
- TACOM/TARDEC/ANAD evaluating coating for M1A Abrams tank on AGT1500 engine
- NAVAIR evaluating coating for SH60, H-1Y, and UH-1Z helicopters on T700 engines



Projected Level 1/2 Benefits:

- E-2: Estimate 1.5X ETOW increase results in $2M/year savings
- C-130: Estimate 1.5X ETOW increase results in $8M/year savings. Estimate 1-2% reduced fuel consumption results in $12M/year savings
- M1A Abrams Tank: Estimate 1.5X MTBR results in $13M/year savings
- MH47: Estimate 2X ETOW increase results in $6M per year savings
- SH-60, AH-1, UH-1: Estimate 1.5X ETOW increase results in $10M per year savings

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VIEW SLIDE DECK

MDS Coatings Technology - US OFFICE
1455 Pennsylvania Ave, NW, Suite 400
Washington, D.C. 20004

Erosion / Corrosion Resistant Coatings for Gas Turbine Engine Compressor Airfoils

MDS Coating Technologies Corporation (MCT) designs and produces metallic-ceramic protective coatings for aerospace and industrial components, including erosion and corrosion resistant coatings for gas turbine compressor parts. MCT has delivered millions of coated airfoils to their customers who are enjoying cost effective, successful and safe operations.

About the presenter: Simon Durham has a PhD from McGill University, Montreal Canada, and has had a 23 year career in gas turbine engines, having worked for Pratt & Whitney Canada and MDS Coating Technologies. Dr. Durham is the VP of Research and Development at MDS Coating Technologies, and has led the development team to produce advanced erosion and corrosion resistant coating families; ultra smooth coatings and fatigue resistant coatings for titanium alloys. These coatings are now finding applications in a broad range of aerospace and industrial gas turbine applications.

MDS COATING TECHNOLOGIES CORPORATION

Contact Information
(202) 280-6389| pr@mdscoating.com | www.mdsprad.ca

1120 - 1150

Intermittent Fault Detection and Isolation System (IFDIS)

Ken Anderson, Universal Synaptics

Universal Synaptics

Ncompass – Intermittent Fault Detector 4000™ (portable)

Intermittent Fault Detection & Isolation System™ (IFDIS)

Technology Currently Being Used by:

Government:

- United States Air Force
- Ministry of Defense, UK
- Royal Australian Air Force
- Australian Army
- Turkish Air Force
- Belgian Air Force
- Royal Norwegian Air Force
- Spanish Republican Air Force

Industry:

- Derco Aerospace
- Raytheon Systems UK
- Total Quality Systems
- Star Aviation
- Copernicus Technology LTD
- SELEX Galileo
- Samsung Electronics

Academia:

- Cranfield University

Where do we see the potential benefits for the technology?

Need to quantify No Fault Found (NFF) costs the DoD $2B annually, in large part due to undetected, unrepaired intermittent faults. Universal Synaptics patented "all lines all the time" circuit monitoring capability is the only proven technology capable of detecting and isolating all random intermittent faults. Every organization within DoD that operates and maintains weapons and weapon systems will benefit from a capability purpose built to reduce NFF through quick and correct intermittent fault detection.

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Universal Synaptics Corporation
4066 S. 1900 W. Suite B
Roy, Utah 84067

Ncompass – Intermittent Fault Detector 4000™ Intermittent Fault Detection & Isolation System™ (IFDIS)

A growing problem that threatens the operational readiness, sustainment and ownership cost of military aircraft. However, recent technical developments have made possible a new inspection method that greatly mitigates this threat, and now multiple Air Force, Navy and NATO case studies are validating the effectiveness of this new capability. The growing problem is intermittent faults in aging aircraft electronic boxes. The recent development is the Ncompass-Intermittent Fault Detector 4000 and the Intermittent Fault Detection & Isolation System (IFDIS).

An intermittent fault, or momentary "open," can be due to a number of different conditions including a cracked solder joint, a corroded contact, a sprung connector receptacle, a loose crimp connection, a hairline crack in a printed circuit trace, a loose wire wrap, or various other conditions all very common in electronic equipment. As the electronic equipment items are pulled from the errant system for bench test, they often test No Fault Found (NFF) and Cannot Duplicate (CND). No repair is performed, because no problem can be detected.

Conventional scanning ONE circuit at a time test equipment is simply not designed to detect intermittent circuits. Rather conventional test equipment is designed to test for nominal operation, and usually "averages out," and hence hides, any short term anomalous intermittent event(s). The IFDIS and Ncompass are testers that were specifically designed to detect and isolate intermittent circuits in electronics.

IFDIS was voted the Winner of the "Great Ideas" Competition at the 2010 & 2012 Department of Defense Maintenance Symposium, a Tibbetts Award winner in 2011, a finalist in the Defense Logistics "Best Technology Implementation" Award Competition in 2011, a "Top 3 Finalist" in the American Technology Awards, Aerospace & Defense Category in 2012 and a "Top 5 Finalist" in the OSD Maintenance Technology Challenge in 2012.

In 2012, Universal Synaptics was ranked 41st on the Utah 100 list of fastest growing companies in Utah according to the MountainWest Capital Network.

The Intermittent Fault Detection & Isolation System (IFDIS) is a tester that was purposely built to fill the conventional ONE circuit at a time testing void. The IFDIS tests the LRU/WRA chassis wiring identifies the precise location of each defect by monitoring ALL of the circuits in the Unit Under Test (UUT) individually, simultaneously and continuously (no scanning, sampling or multiplexing), detecting any intermittent event even as short at 50 nanosecond (0.00000005 seconds), that's one twentieth of a millionth of a second. This quantum leap in test technology enables the chassis wiring problems to be easily repaired, as the root cause of the fault that drove the equipment item in for repair is accurately identified and isolated. Repairing the defect is usually trivial; finding the defect has always been, and continues to be, the problem.

About the presenter: Ken Anderson is Vice President, Sales & Business Development for Universal Synaptics Corporation, the industry leader in detecting and isolating intermittent faults in electronic systems. Anderson has more than 17 years' experience managing regional, national and international sales areas and programs with a consistent record of achievement. Anderson has been a Keynote speaker and featured presenter at numerous Aerospace, Defense and Maintenance Conferences and is on the Board of Directors for the Defense Industry Alliance.

Anderson also served in the United States Army where he received numerous accolades and awards for outstanding service to the United States of America.

Contact Information
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Universal Synaptics

1150 - 1220

Visual Work Cards
Streamlining Maintenance Processes

Randy Kirk, Aspire Solutions, Inc.

The AP&IG technology provides point-of-use (POU) inspection and data collection capabilities. It is novel because it streamlines the inspection process by standardizing both the process and defect results ensuring that every item is inspected the same way and has the same result regardless of who performs the inspection (reliable, repeatable process)…

- Automates data collection
- Highly mobile
- Standardizes processes
- Easy to use
- Standardizes defects
- Extremely versatile
- Ensures accountability
- Eliminates paper
- Reference material at POU
- Actual photos

CTMA Investment - $250K
Industry Cost Share - $690K

DoD Benefits:

Level 1 Benefits:
- Manpower reduction 41%
- Inspection time decreased 43%
- Reporting time reduced 94%
- Inspector training time down 80%
- Test flights decreased 42%
- Realize savings for two pilots of $6.2M annually with additional $8M savings in self funded projects

Level 2 Benefits:
$35M annually estimated

Level 3 Potential:
- $100M annually estimated across the Army and Air Force

Application by Armed Services:

CTMA Sponsored:
- Red River Army Depot
- Tinker Air Force Base
- Activity Sponsored:
- Red River, Tobyhanna, Corpus Christi, Anniston Army Depot
- OC-ALC
- Dyess, Ellsworth, Seymour Johnson, MacDill, McConnell AFB's
- Albany & Barstow Marine Corps Maintenance Center

Potential:
- Barstow Marine Corps Maintenance Center
- Albany Marine Corps Maintenance Center
- LetterKenny Army Depot
- WR-ALC
- OO-ALC
- Numerous field level opportunities being pursued

Realized Total Savingsto Date: $14.2M

DoD Potential Cost Benefits $100M/year assuming broad cross-service adoption

PLAY PRESENTATION VIEW SLIDE DECK

Aspire Solutions, Inc.
323 W. Spring St.
Fayetteville, Arkansas 72701

Automated Process and Inspection Guide

Aspire Solutions, Inc (ASI) provides true mobile analysis and data collection capabilities directly at the point-of-use. The Process Guide can operate wireless or remotely (no network access) on many different mobile computing options. The user follows the customizable guide and syncs the data to a centralized computer making it instantly available.

- Standardized Process and Data – The Process Guide streamlines processes by standardizing process ensuring that every operation is performed the same way and has the same result regardless of who performs the process. It also eliminates slang and abbreviations ensuring information is collected in a standardized manner enabling real time data and trend analysis.
- Knowledge Management/Training Aid – Critical head knowledge and on-the-job experience is captured and distributed throughout the workforce, and not lost via promotions and retirement.
- Visual Work Cards – The Process Guide supplies actual pictures of operations making them simpler and reducing training time including the ability take actual photos and annotate them to highlight difficult to decipher issues.
- Technical Material – The Process Guide provides point-of-use access to technical materials including TO's/TM's, DMWR's, drawings, etc. The toolset design makes establishing new guides quick and easy.
- Inspections/Audits – The Process Guide directs the user through the process ensuring every item is properly inspected and defects are logged in a standardized method.
- Root Cause/Trend Analysis – The Process Guide has the ability to fully analyze key performance indicators and focus on problem areas to drive improvement into the organization.
- Centralized Data – The Process Guide can sync to a centralized computer making it instantly available. Any changes to data on the centralized computer are automatically synced to all mobile devices ensuring complete version control management.

It is difficult to improve what you cannot measure. The Process Guide provides a flexible toolset that enables true organizational improvement by converting raw data into useful information. ASI's Process Guide provides advanced process and data standardization service yielding benefits that far exceed existing manual processes and database solutions.

About the presenter: Randall "Randy" G Kirk is the President and CEO for Aspire Solutions, Inc (ASI). ASI was founded in 2003 and provides business re-engineering and niche products focused on the MRO (Maintenance Repair & Overhaul) environment. Mr. Kirk has over 20 years experience in MRO and supply chain management including the design and implementation of many types of projects/applications. Mr. Kirk has worked with over 30 different organizations including AutoZone, Celestica, Coca-Cola, and Texas Instruments, and has significant experience within the government with the Federal Aviation Administration and DoD experience within the Army, Air Force, and Marine Corp depot maintenance and field maintenance environments.

Previously, he served as the Vice President of Engineering for Global Concepts, Inc where his team performed supply chain development for many large organizations including Walmart, Proctor and Gamble, and JB Hunt. Mr. Kirk holds a B.S. from Murray State University in Mathematics and Computer Science and a M.S. in Industrial Engineering/Operations Research from the University of Arkansas.

Mr. Kirk actively volunteers in the community and is involved with numerous youth sports and charities. He serves or has served on several corporate and charity boards. Personally, he enjoys the outdoors including hunting and fishing.

ASPIRE Solutions

Contact Information
479-966-4381 | info@aspiresolns.com | www.aspiresolns.com

1310 - 1340

Fastener Removal Improvement Technology Adoption (FRITA)

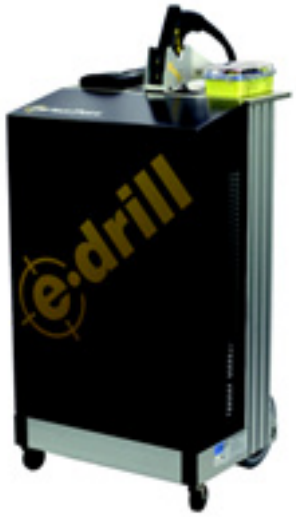
Bill Chenevert, NCMS (for Michael Gibbons, Perfect Point EDM)

Perfect Point

E▪drill™ Fastener Removal System:
A handheld implementation of conventional Electro-Discharge Machining (EDM) technology for faster, cleaner and safer removal of aircraft fasteners. Developed by Perfect Point EDM under patent.

Currently Deployed
- U.S. Navy FRCSW: F/A-18 Center Barrel Program
- U.S. Army PIF, Redstone Arsenal UH-60 Stabilator
- Under investigation – Robins AFB – C130 Wing box Taper Loc blind rivets and CCAD applications
- Several commercial applications (Lockheed, Gulfstream, Pratt & Whitney)

Benefits:
- Faster removal times
- Decreased damage to aircraft
- FOD elimination
- Ergonomic improvement



PLAY PRESENTATION VIEW SLIDE DECK

Perfect Point EDM
15000 Bolsa Chica, Unit C
Huntington Beach, CA 92649

Fastener Removal Improvement Technology Adoption

The Fastener Removal Improvement Technology Adoption (FRITA) project is a collaborative effort between Perfect Point Inc., NCMS, and several aircraft maintenance Depots across the DoD. The project introduces a new technology for the optimization of aircraft fastener removal procedures, and presents a plan to streamline the adoption of this technology into DoD.

The current approach to aircraft fastener removal is extremely labor intensive and has traditionally resulted in high damage rates, requiring the use of standard twist drills to separate the fastener head and body. The commonly accepted side effects of the existing method include low productivity, structure damage, noise, repetitive motion and eye injuries, and the FOD hazard to equipment and personnel resulting from thousands of drill shards.

In 2009, a new technology known as the e▪drill was developed by Perfect Point EDM to address and mitigate the disadvantages associated with fastener removal using conventional methods. A handheld implementation of EDM (electro-discharge machining) technology, the e▪drill uses spark erosion to cut a circular groove into the head of a fastener to a depth corresponding to the head thickness. After cutting, a thin fillet of material is left which is easily fractured when struck with a hammer and punch. The cutting process produces fine particulate debris that is flushed away and captured by a closed-loop fluid handling system, resulting in a fast clean cut whose only remnants are the fastener head and body. The effectiveness and cost savings attributable to e▪drill implementation have been conservatively estimated at better than a 50% reduction in labor and a 75% reduction in damage rate and associated costs.

While a limited number of military locations have put the e▪drill into service, the DoD has yet to realize the benefits of the system on an extensive scale. Currently, the engineering analysis and training development required for narrow local approvals have been largely inconsistent and have required redundant efforts. The objective of the FRITA project is to address these issues by coordinating the efforts of multiple locations to develop a common set of Engineering, Process and Training specifications pertaining to e▪drill deployment that will be applicable across multiple facilities and Services within the DoD.

About the presenter: Mr. Chenevert, Senior Program Manager for NCMS, has managed several successful R&D projects developing new manufacturing technologies including in-depth analysis of nanoparticulate additives in diesel fuels, new trivalent chromium technologies replacing highly toxic hexavalent chromium, modernization of electroplating techniques and advanced gaming and simulation-based technical training. Given a successful career of over 34 years in senior manufacturing management positions with Ford Motor Company, Mr. Chenevert also has extensive experience in quality management (process improvement/Lean/Six-Sigma), vehicle and component manufacturing, electroplating, plastics composites, sustainable manufacturing and technical training.

Perfect Point

Contact Information
206-888-6251 | mgt@ppedm.com | www.ppedm.com

1340 - 1410

Q5800 – Expeditionary Fluid Analysis System (EFAS)

Robert Yurko, Spectro, Inc.

The ***TotalOil Q5800*** Expeditionary Fluid Analysis System (EFAS) provides field proven XRF, IR, Dynamic Visc and Particle Count technology in a compact ruggedized battery operated case to meet the requirements of onsite oil condition and wear metal analysis.

The TotalOil Q5800 is a system consisting of field proven COTS technologies that have been used extensively in the field for analytical and condition monitoring applications. Wear metal analysis is performed using a compact XRF module widely used in the field for metallurgical analysis and is coupled with a pore blockage particle counter. Physical properties are determined using a mid-IR spectrometer from widely accepted handheld and portable technology. Dynamic viscosity at 40°C uses parallel plate technology from field proven portable instrumentation. The TotalOil Q5800 system is a TRL 8 product currently undergoing user hardness qualification testing, Mil-PRF-28800F, Class 2.

This technology places the two pillars of condition monitoring **(Lubricant Condition and Wear Debris Analysis)** in the hands of the field deployed maintainer where it is most needed and effective for mission critical success.

The TotalOil Q5800 weighs **35 pounds**, has a small footprint, requires no flammable or hazardous solvents and can analyze up to 50 samples on a single charge.

The TotalOil Q5800 is ideally suited for **rapid deployed aircraft**, shipboard and marine use as well as forward deployed armored units.

PLAY PRESENTATION VIEW SLIDE DECK

Spectro Inc.
One Executive Drive, Suite 101
Chelmsford, MA 01824-2563

Instruments for Analyzing Lubricants and Fuel, to Predict and Avoid Machine Failure

Spectro Inc., an ISO 9001:2008 company, specializes in analytical tools and software for machine condition monitoring. The company is one of the largest suppliers of oil and fuel analysis instruments to industry and the military worldwide. Industry clients include petrochemical, mining, marine and power generation companies as well as commercial testing laboratories. Spectro Inc.'s extensive product offerings include spectrometers for wear metal analysis, lubricant degradation and contamination analyzers, particle analysis instruments and complete turnkey systems for oil or fuel analysis laboratories, all managed by its SpectroTrack software platform.

Spectro Inc. develops a broad array of fluid analysis instruments for evaluating machine and lubricant condition in the field, in the lab and in highly mobile, handheld applications. The instruments provide critical data about an engine's condition and can provide an early warning of engine failure.

Capturing, analyzing and trending this data on Spectro Inc. products enable you to:

- Schedule maintenance before a failure occurs
- Avoid the expense of maintenance you don't need
- Avoid the disruption of taking an engine out of service unnecessarily

The result is higher equipment availability, greater productivity, lower maintenance costs, lower total cost of ownership, fewer outages, optimal equipment performance and greener operation.

About the presenter: Robert Yurko has been at Spectro Incorporated since 1983 and Vice President since 1988. Bob currently manages Manufacturing Operations and is the management representative of Spectro Incorporated's ISO Quality Management System. He has been responsible for much of the research and development of Spectro Incorporated's instrumentation and technology currently in use by the DoD JOAP and the tribology industry today. Bob joined Spectro Incorporated in 1983 after working 10 years in the field of spectroscopy for Baird Corporation's Government Systems Division where he had primary responsibility for analytical applications and worldwide field engineering management. He received an Associates degree in Computer Science from Pennsylvania Technical Institute in 1971, and business management courses at Boston University in 1978. He has authored and co-authored several publications in the field of spectroscopy and analytical techniques. He has been a member of the ASTM and the ASNT organizations.

SPECTRO INC.

Contact Information
978-431-1120 | ryurko@spectroinc.com | www.spectroinc.com

1410 - 1440

Sources Sought in America's VOICe

Nainesh Rathod, Imaginestics, LLC

Problems:

- Many DoD parts that are posted through FedBizOpps and DIBBS are unable to be sourced
- Small/medium-sized manufacturers have difficulty competing for DoD business
- DoD supply chain can be expanded in some areas
- Manufacturers new to DoD business have difficulty responding to solicitations without being pre-approved

Customers:

- U.S. Airforce
- U.S. Marine Corps
- U.S. Navy
- U.S. Army

Solution:

Sources Sought in America's VOICe provides a platform that enables buyers to create opportunities, upload TDPs, and match requirements to the capabilities of suppliers.

The platform then allows for the matching supplier to respond to the opportunity directly through the Sources Sought app. When the supplier uploads their SAR package; it is automatically zipped and delivered to the buyer.

Benefits:

Sources Sought in America's VOICe makes it easier for the DoD to find U.S. manufacturers with the right capabilities, and also makes it easier for U.S. manufacturers to find and secure DoD opportunities that match their capabilities.

Easier access to the Sources Sought Process gives manufacturers a foot in the door to being able to bid and win future DoD solicitations.

PLAY PRESENTATION

VIEW SLIDE DECK

Imaginestics, LLC
3495 Kent Avenue, Suite A100
West Lafayette, IN 47906

Imaginestics, as part of the Connecting American Manufacturing, a DoD OSD initiative launched America's Virtual Opportunity Interchange Center (VOICe) in July 2012 to provoke both traditional and non-traditional manufacturers to seek DoD-related business. Suppliers in America's VOICe have been successful in receiving hundreds of DoD awards since its launch due to the unique social network based concept using shape search applied to engage suppliers and buyers. Imaginestics' technology has been used in many CTMA projects to benefit DoD and its warfighter and NCMS is an on boarding partner with America's VOICe. To extend this success in helping DoD buyers, Imaginestics launched the Sources Sought App in America's VOICe to help the buyers fulfill the "hard to source" items and guide supplier's through DoD's Source Approval Request (SAR) process. To-date DoD buyers at Oklahoma Air Logistics Center, Marine Corp Logistics and DSCC have contributed 3,347 hard-to-source parts requests to solicit and engage qualified suppliers. This presentation will provide a brief overview and the Sources Sought process and how suppliers can get engaged.

About the presenter: Nainesh Rathod, co-founder and CEO, guides Imaginestics' vision, technical strategy, and product direction. Imaginestics is the leader in visual search. Before founding Imaginestics, Mr. Rathod founded Maxim I/T in 1996, which was acquired in 2003. Previous to that, he held several engineering and executive positions at Flow Dynamics Lab, EDS, and MEEDCO. Mr. Rathod received his bachelor's degree in Engineering (with a special interest in Gas Dynamics) from Purdue University and successfully completed the three-year ESE program at EDS. He has also received several professional certifications.

imaginestics

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1440 - 1510

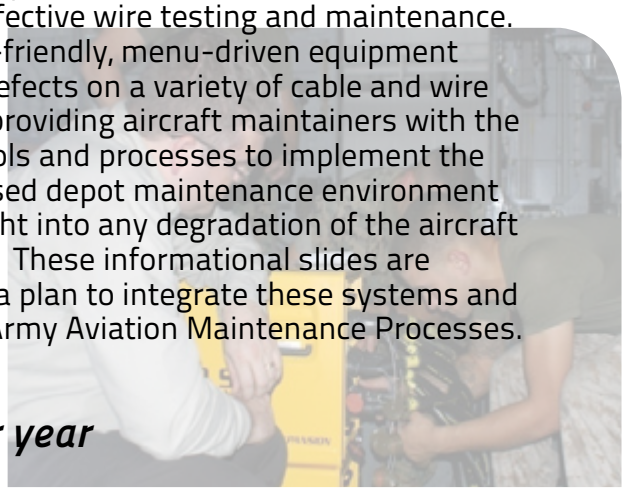
Electrical Component Analysis System (ECAS)

Chris Teal, Eclypse International

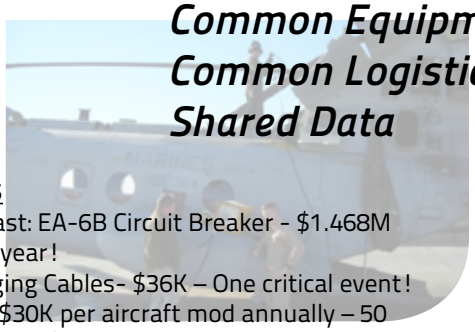
Wiring is a crucial and complex system spanning entire weapon systems. Thousands of mission aborts and hundreds of thousands of non-mission capable hours per year are attributed to wiring incidents. Wiring is truly a critical system that requires new maintenance tools and processes to address maintenance realities. The time for improved changes is here.

ECLYPSE INTERNATIONAL

The Automatic Wire Test Set (AWTS) is part of an OSD effort known as the Electrical Wiring Integrity System which demonstrated the benefit that can be realized by effective wire testing and maintenance. The technology is a reliable, user-friendly, menu-driven equipment that detects and locates wiring defects on a variety of cable and wire types. Additional focus includes providing aircraft maintainers with the necessary inspection test protocols and processes to implement the technology effectively into a phased depot maintenance environment providing early warning and insight into any degradation of the aircraft complex interconnecting system. These informational slides are meant to provide an overview of a plan to integrate these systems and methods into the United States Army Aviation Maintenance Processes.



DoD Potential Cost Benefits: $2.5B/per year



Common Equipment
Common Logistics
Shared Data

Return On Investment – This Task

- Manual testing of processes now automated
- Repeatability
- High Speed
- Improved Testing Methods
- Higher Integrity Overall

Real Savings Examples

- USN/USMC FRC Southeast: EA-6B Circuit Breaker - $1.468M overall cost savings in 1 year!
- PNSY: Shipyard Crane Aging Cables- $36K – One critical event!
- Ogden ALC: F-16 Mod - $30K per aircraft mod annually – 50 aircraft completed annually ($1.5M)
- Seymour Johnson AFB: finding and correcting F-15 wiring faults is resulting in a $49M/year cost savings Fleet wide
- TYAD: $1,400/shelter maintenance cost savings in T/S costs – throughput increased!

PLAY PRESENTATION

VIEW SLIDE DECK

Eclypse International
265 N. Joy Street, Suite 150
Corona, CA 92879-1323

Setting the Stage for Future Electrical Maintenance within DoD

The Electrical Component Analysis System (ECAS) developed by Eclypse is an ideal solid base for establishing and maintaining electrical power and signal distribution systems. Everything from simple cable and harness assemblies to more complex circuit boards, relay panels, circuit breaker panels and backplanes can be tested. Eclypse products and processes are commonly integrated into our customers' manufacturing processes and are used to validate configuration prior to automated and controlled power on. As part of the manufacturing process, our products are used to validate functionality and adherence to quality standards and specifications. Customers use our solutions to perform verification of function and track such functions automatically. Eclypse products can be integrated into the manufacturing processes and maintenance of the following systems:

- Automobiles
- Aircraft
- Rail Systems
- Shipboard Systems
- Any Manufacturing System

These products and their capabilities have positioned Eclypse as a leader in complex distributed power systems diagnostics in the first ever Joint Military purchase of the Automatic Wire Test Set (AWTS). More than just a wire tester, the AWTS includes programmable power energization that allows verification of electrical systems integrity with the least amount of disconnections. AWTS also includes a valuable "Self Learn" function that determines the circuits condition; perfect for maintaining configuration control; a very powerful capability for reverse engineering applications. AWTS is also being integrated into manufacturers MRO's, and fast paced maintenance environments around the world.

We deliver products and services on time, every time, which meet or exceed the expectations of our customers for quality and value.

About the presenter: Chris Teal is the Marketing Director at Eclypse International, responsible for world-wide market activities based on the objective of improving Electrical Wiring Interconnect Systems (EWIS) over the last 15 years targeted health and safety improvements based on efforts of Eclypse with the White House Commission on Aircraft Safety; known as the Air Transport Safety Rulemaking Advisory Committee.

Previously Mr. Teal was a Systems Support Engineer for Hughes Aircraft Company, responsible for overhaul and maintenance programs supporting Tactical Data Systems for Combat Information Centers (CIC) on U.S. Naval war ships. Mr. Teal has been a technical writer for Hughes Technical Publications and contributed to the development of the systems level troubleshooting manuals for weapons launch control systems on the 688 Class attack submarines. He spent over a decade supporting refurbishment of aged electronic systems at the Hughes Aircraft Depot in Fullerton, CA. While on active duty with the U.S. Navy he was a maintenance supervisor onboard the USS Kinkaid, DD-965, responsible for maintenance of combat weapon systems in direct support to the U.S. Naval fleet including participating NATO vessels and concluded his military career as the Maintenance Supervisor for Fleet Combat Training Center Pacific, Point Loma, CA. Mr. Teal has published numerous articles for various technical journals and magazines related to aging electrical systems and integrity of complex weapons systems.

ECLYPSE
INTERNATIONAL

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1510 - 1540

IUID Enabled Workscope Optimization

Matt Juarez and Matthew Moseley, StandardAero

StandardAero

Use of ***IUID*** (2D data matrix) and laser marking to increase the accuracy and decrease the labor requirements of a turbine engine reliability data collection program.

Currently, both IUID and laser marking technologies are being used in many industries, as well as within the DoD.

Benefits:

Cost and Reliability Optimization tools currently being used by the USAF rely on the accurate and timely collection of data. Reducing errors in the data and increasing the number of assets in the data collection program will increase the tools' accuracy. This in turn will increase engine reliability and decrease long term maintenance costs.

PLAY PRESENTATION VIEW SLIDE DECK

StandardAero
1524 W. 14th Street, Suite 110
Tempe, AZ 85281-6974

StandardAero is one of the world's largest independent providers of services, including engine and airframe maintenance, repair and overhaul, engine component repair, engineering services, interior completions and paint applications. StandardAero serves a diverse array of customers in business and general aviation, airline, military, helicopter, components, energy and VIP completions markets. A Dubai Aerospace Enterprise (DAE) company, StandardAero provides a global service network of 13 primary facilities in the U.S., Canada, Europe, Singapore and Australia, along with an additional 50 sales and field service locations. The company celebrated its 100th year of industry leadership in 2011.

Company Facts

- StandardAero's facilities consist of more than two million square feet
- Worldwide employment of approximately 4,000
- Annual revenue of $1.6 billion
- Global services network of primary facilities, plus over 50 sales and field service locations
- Customers in more than 80 countries

Services:

Airframe – Performs airframe work ranging from required maintenance inspections to major alterations and AOG support. All facilities are FAA - Class 4 certified repair stations. Services are provided for: Dassault Falcon, Bombardier Challengers, Global Express, Learjet, Gulfstream, Hawker, Embraer, Cessna, Airbus Industries, Boeing Business Jet and many other turbofan and turboprop aircraft.

Associated Air Center – Associated Air Center is world renowned for its custom-designed and crafted interior completions, MRO services, engineering and certification. A world leader in the maintenance and modification of large transport category aircraft, clients include internationally known individuals, corporations and heads of state.

Auxiliary Power Units – Main supplier of major maintenance for Honeywell 36 Series and RE220 auxiliary power units (APUs), as well as serving as an Authorized Repair Facility on the Hamilton Sundstrand APS2300 APU.

Avionics – StandardAero is an industry leader in major and minor avionics installations, with capabilities including FAA Repair Station certified Instrument and Radio ratings. StandardAero is an authorized distributor for most OEM suppliers of avionics, connectivity products and cabin management systems.

Completions and Paint – With over 50 years of experience, StandardAero's facility in Springfield, Illinois (USA) offers interior and exterior design services, including interior refurbishments and state-of-the-art exterior paint capabilities for a wide range of business aircraft.

Component Repair & Overhaul – Following the philosophy of "repair rather than replace" worn or damaged parts to meet OEM specifications, the team works to shorten turnaround times, while helping optimize engine performance and minimize overall operating costs. This service includes repair and overhaul for a multitude of OEM engine and APU components including Rolls-Royce, General Electric, Pratt & Whitney and Honeywell.

About the presenter: Matt Moseley has a B.S. in Mechanical Engineering from the University of Missouri-Rolla and is a Certified Reliability Engineer. He has been with the StandardAero team performing reliability related work for nine years. Currently a Sr. Reliability Engineer, specializing in the areas of life data analysis, reliability prediction and cost optimization tools, and fleet simulation. Matt is currently exploring the use and cost benefit of incorporating IUID codes into the T56 turboprop engine reliability data collection effort.

StandardAero

Contact Information
800-492-9977 | Matthew.Moseley@StandardAero.com | www.standardaero.com

1540 - 1610

Wireless Command and Control of Material Handling Assets

Ken Ehrman, I.D. Systems, Inc.

I.D. Systems, Inc.®

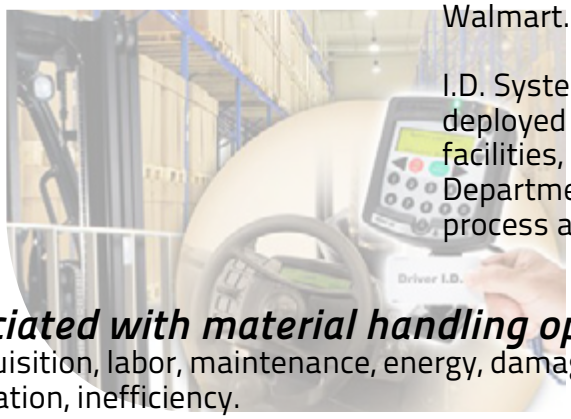
"PowerFleet®" by I.D. Systems:

Wireless command and control over material handling assets.

- Equipment access control with CAC card
- Electronic safety inspection checklists
- Impact detection & management
- Maintenance control & management
- Equipment utilization analysis
- Labor efficiency analysis
- Equipment readiness optimization
- Wireless communication with FIPS-compliant Wi-Fi
- State-of-the-art COTS software

More than half of the Fortune 200 companies that operate industrial trucks have implemented wireless vehicle management systems (VMS) for their material handling operations. Organizations that have utilized I.D. Systems' VMS technology include 3M, Alcoa, American Airlines, Bridgestone Firestone, Caterpillar, CNH, ConAgra, Continental Tire, Cummins, Daimler, FMC, Ford Motor Company, General Mills, General Motors, John Deere, Kellogg's, Kraft, Nestlé, Procter & Gamble, Sysco, Toyota, Walgreens, and Walmart.

I.D. Systems' VMS technology has also been deployed nationwide in U.S. Postal Service facilities, and is being tested by the U.S. Department of Defense in a pilot program in process at Red River Army Depot.



Costs associated with material handling operations are extensive:

equipment acquisition, labor, maintenance, energy, damage, lost work time from accidents, low asset utilization, inefficiency.

Wireless command and control over material handling assets establishes operator accountability, improves operational safety, reduces operating and capital costs, and improves productivity, asset utilization and asset mission-readiness. The potential savings to DoD have been calculated at over $490 million annually.

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I.D. Systems, Inc.
123 Tice Blvd.
Woodcliff Lake, NJ 07677

PowerFleet® Wireless Industrial Vehicle Management System (VMS)

Essential Functions for Controlling, Tracking & Managing

- Fleets of Material Handling Equipment
- Equipment access control with CAC card
- Electronic safety inspection checklists
- Impact detection & management
- Maintenance control & management
- Equipment utilization analysis
- Labor efficiency analysis
- Equipment readiness optimization
- State-of-the-art COTS software
- Wireless communication via secure FIPS-compliant Wi-Fi
- Data Analytics option to benchmark performance of facilities across enterprise and compare to industry standards

Benefits

Establishes vehicle operator accountability, improves operational safety, reduces operating and capital costs, and improves productivity/asset utilization/asset mission-readiness.

Potential Savings to DoD Estimated at >$490 million annually

About the presenter: Mr. Ehrman is the founder and president of I.D. Systems, Inc. (NASDAQ: IDSY), a global leader in developing and deploying wireless solutions for controlling, tracking and managing high-value enterprise assets, such as material handling equipment. Mr. Ehrman holds multiple patents in this field. He graduated from Stanford University with a Bachelor of Science degree in Industrial Engineering, with a focus on management, production, and finance. Prior to founding I.D. Systems, Mr. Ehrman was a production manager with Echelon Corporation, the world leader in networking every day devices.

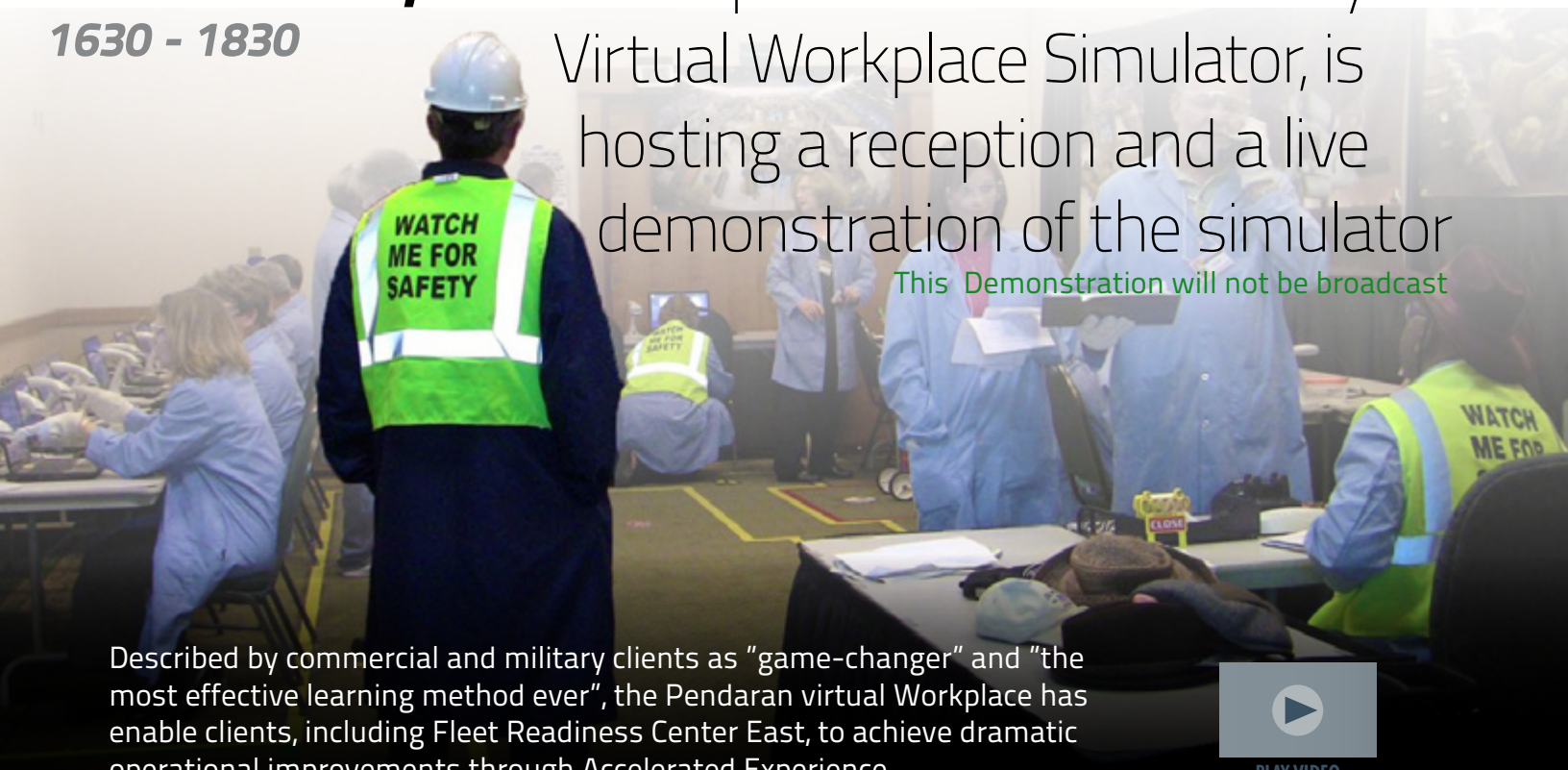
I.D. Systems, Inc.®

Contact Information
201-996-9000 | info@id-systems.com | www.id-systems.com

Pendaran, Inc. developer of the revolutionary Virtual Workplace Simulator, is hosting a reception and a live demonstration of the simulator

1630 - 1830

This Demonstration will not be broadcast



Described by commercial and military clients as "game-changer" and "the most effective learning method ever", the Pendaran virtual Workplace has enable clients, including Fleet Readiness Center East, to achieve dramatic operational improvements through Accelerated Experience.

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0830 - 0900

SERDP and ESTCP Program

Dr. Jeffrey Marqusee, Executive Director

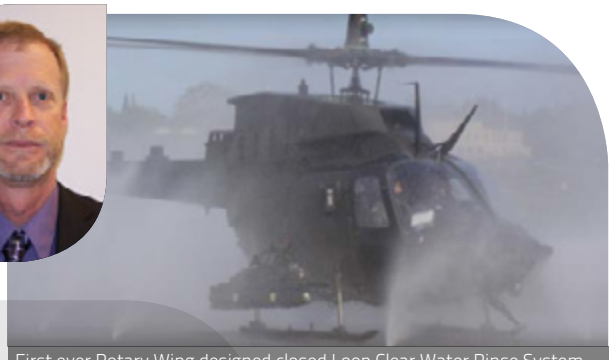
The Strategic Environmental Research and Development Program (SERDP) and the Environmental Security Technology Certification Program (ESTCP) are the Department of Defense's primary environmental RDT&E programs. SERDP address high priority environmental issues that impact DoD's mission through investments in science and technology at universities, industry and government laboratories. ESTCP supports demonstrations of emerging environmental technology at DoD facilities to assess their cost and performance and gain end-user acceptance. One of SERDP and ESTCP's primary focus is to support research, development, and demonstrations on technologies to reduce, control, and understand the sources of waste and emissions in the manufacturing, maintenance, and use of weapons systems and platforms. Maintenance activities are key in improving the environmental performance of DoD and reducing lifecycle costs. The presentation will describe SERDP and ESTCP and highlight are current investments.

VIEW SLIDE DECK

0900 - 0930

Corrosion Prevention and Control Program

Richard Hays, Deputy Director



First ever Rotary Wing designed closed Loop Clear Water Rinse System

Corrosion negatively impacts the cost, availability, and safety of DoD weapons systems and infrastructure. The most recent cost of corrosion study conducted by the DoD Corrosion Policy and Oversight (CPO) Office shows that the annual cost of corrosion for DoD assets is approximately $20B and that corrective and preventive actions related to corrosion represent 20% of all maintenance costs. CPO is implementing a comprehensive program to reduce these impacts that involves policy development, acquisition oversight, training, metrics development, outreach, and science and technology investment. This paper provides an overview of the CPO technology development/implementation program in which OSD has invested $80M since its inception in FY 2005. Proposal requirements and examples of successful projects will be provided.

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1000 - 1145

Joint Technology Exchange Group (JTEG) Panel

Panel Members

Kurt Doehnert
Naval Sea Systems Command

Thomas Spitler
Air Force Materiel Command

Greg Russell
Marine Corps Logistics Bases

Robert Kestler
Naval Air Systems Command

Robert Dittmann
Army Materiel Command

JTEG Joint Technology Exchange Group

Joint Solutions for Depot Maintenance

Greg Kilchenstein
Panel Moderator

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Joint Technology Exchange Group (JTEG) Department of Defense Depot Maintenance Activities are constantly under pressure to become more efficient. One of the most effective ways to improve efficiency is to identify and insert new technologies, which all of the Services do through various Service and DoD technology programs such as CTMA. The JTEG was created to better leverage technology improvements in depot maintenance through the collaboration of the Services, Joint Staff, OSD, and industry. The JTEG serves as a forum for the exchange of information on new technology, processes, and equipment developments and is a strong advocate for new technology with cross-service potential. The panel will highlight the JTEG objectives and recent activities, while the Service representatives will present key technology insertion actions they are conducting as well as review their overall technology needs with respect to maintaining and upgrading depot maintenance capabilities.

Click on photos to view full biography

Closing Remarks

http://jteg.ncms.org

1230 - 1345

OSD/NCMS Maintenance Challenge

Keith Maxwell, Lockheed Martin Missiles and Fire Control

Industrial Human Augmentation System Prototype Re-Design for Affordability

In an industrial environment, removing the load of heavy tool operation increases a worker's productivity and improves the quality of work. Removing the load also reduces work-related injuries that drive up life cycle and insurance costs.

The MANTIS is a Human Augmentation device that enhances industrial workers' strength, endurance, and mobility by offloading the weight of heavy tools and equipment from their bodies and transferring it through the exoskeleton to the ground.

The MANTIS Human Augmentation System provides wide applicability across DoD maintenance, manufacturing, and support operations by integrating with current processes and tools, with minimal modification.

The MANTIS accommodates the Equipois zeroG® mechanical arm that allows workers to maneuver tools as if weightless, and with total freedom of motion.

The zeroG® mechancial arm allows workers to use heavy tools as if weightless.

Features

- Transfers loads through structure to the ground
- Anthropomorphic design maintains operator flexibility
- Requires no power, electronics, or actuation
- zeroG® arm allows operators to use heavy tools as if weightless
- Supports the tool through a wide range of motion
- Single arm stabilizes tools up to 40 lbs
- Simple to operate and minimal training required

MANTIS™

LOCKHEED MARTIN

Tool Applications

- Impact/torque wrenches
- Fastening tools
- Grinders/sanders
- Reciprocating saw
- Heat induction tools
- Needle guns
- Blasting tools

zeroG

Lockheed Martin Corporation
Missiles and Fire Control
Business Development
Phone: (407) 356-4464 Fax: (407) 356-7199
www.lockheedmartin.com/mfc

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equipois
DEFY GRAVITY™

Honorable Mention

Digital Pen and Paper

(ADAPX, FRC SOUTHWEST)

The user would employ a pen that records the data being written on paper that has been printed on site with a microscopic pattern of dots. The pen can transmit the data via Bluetooth or via docking at a depot computer. Because each piece of paper is unique, and the pen knows precisely which piece of paper it is writing on, the user can fill out any form at any time, alternating among them as s/he pleases.

Automated Process & Inspection Guide

(ASPIRE SOLUTIONS)

To automate the existing manual, paper based maintenance and inspection operations. AP&IG standardizes these processes by providing detailed guided work flows using actual pictures that walk the mechanic/inspector thru a set of procedures.

PLM for Aircraft Sustainment

(FRC EAST, DASSAULT)

The team proposes a solution to enable users to access engineering, maintenance and logistics information that is required for maintenance in a common environment. This will provide users with the capability to bridge gaps between the fleet and the FRC. The solution will provide the ability to capture and utilize complex data in a native state generated by a range of technologies and configuration management tools.

Intermittent Fault Detection & Isolation System

(UNIVERSAL SYNAPTICS)

The IFDIS tests the LRU WRA chassis wiring and identifies the precise location of each defect through the use of a hardware neural network that monitors all of the circuits in the Unit Under Test individually, simultaneously and continuously detecting any intermittent event even as short. This quantum leap in test technology enables the chassis wiring problems to be easily repaired, as the root cause of the fault that drove the equipment item in for repair is accurately identified and isolated. Repairing the defect is usually trivial; finding the defect has always been, and continues to be, the problem.

Laser Metal Deposition, Repair & Remanufacturing

(FOCUS HOPE INDUSTRIES)

All military vehicles have rotating metal components which exhibit wear, damage, and/or corrosion during their regular service life. When the damage reaches the extent that the relative vehicle systems' performance is or will be affected these worn parts are typically replaced with new parts and the old part is relegated to the scrap pile. While these old parts cannot be reused in their worn condition, a significant level of useful value is lost when they are simply recycled for their metal. The Project Team proposes to develop a pilot production remanufacturing process for a Government-selected high value component to significantly reduce its life cycle costs.

2D/3D Data Model Collaboration

(NAVY FRC'S, SIEMENS, SIS)

The project team proposes a solution that will enable users at FRC Southeast and FRC East to access engineering and manufacturing information from the FRC Southwest via web interface. Each location will be able to utilize configuration controlled data generated by a range of technologies for acquiring the 'as-is" condition for aircraft that enter the NAVAIR depot environment. The solution will provide a collaborative environment for maintenance and repair activities between the Depots. Data from the new environment will be formatted and managed to allow a team of users to access, visualize, collaborate, manipulate, and conference using engineering information, (2D and 3D) in a secure and traceable way.

Automated Rotor Blade Stripping System

(GLC, FRC EAST)

The project team proposes to: 1) bring ARBSS fully on line in FY 2013 for immediate cost reductions, 2) to establish a track record of reliable performance, and 3) to extend the qualification of the process to V22 and H-1 substrate materials.

Model Based Definition

(NAWCAD LAKEHURST)

The project team proposes to formulate a MBD Technical Data Package (TDP) which will consist of engineering drawing formats that are compatible with the existing 3D PDF (PRC) solution, and embedding STEP files into these PDF files. A comparison of the PRO/E models with the new PRC and STEP model files will be conducted to ensure that these models define an identical geometry.

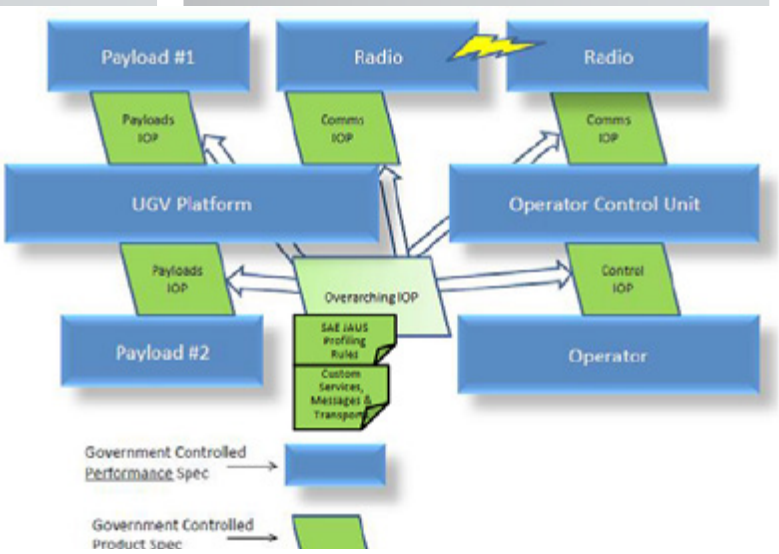
1345 - 1415

Unmanned Ground Vehicle (UGV) Interoperability

Mark Mazzara, Robotic Systems Joint Program Office

The UGVs are being applied on a variety of S&T programs and Program of Record risk reduction programs (such as this NCMS project). The RS JPO intends to require this technology in all of its future acquisitions.

This technology will benefit the military UGV industry by driving enhanced competition, providing the ability for systems to be rapidly upgraded, reducing obsolescence risks, and enabling seamless interoperability between components developed by different vendors.



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Robotic Systems JPO
6501 E 11 Mile Rd - MS266
Warren, MI 48397

Component Interoperability for the Micro Robot Weight Class

The Robotic Systems Joint Project Office (RS JPO) has developed UGV Interoperability Profiles (IOPs) for defining the hardware and software interfaces between UGV platforms, payloads (cameras, sensors, arms, etc.), radios, and controllers. This modular, open systems approach will broaden the industrial base of UGV technology and allow the RS JPO to more rapidly upgrade its systems as technology develops and obsolescence issues are encountered.

The Component Interoperability for the Micro Robot Weight Class project through NCMS has aimed to reduce risk to emerging RS JPO programs, to determine the feasibility of utilizing the UGV IOPs on a small (20 lbs or less) weight class of robots.

About the presenter: Mark Mazzara is the Robotic Systems Joint Project Office (RS JPO) Team Lead for Systems Engineering & Interoperability. He previously held systems engineering related positions within TARDEC, PEO CS&CSS, and PEO GCS. He holds a B.S. in mechanical engineering and a M.S. in systems engineering, both from Oakland University, and is Defense Acquisition University Level III certified in both Systems Engineering and Program Management.

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Fax: 586-282-9282| robotics.jpo@us.army.mil | www.rsjpo.army.mil

1415 - 1445

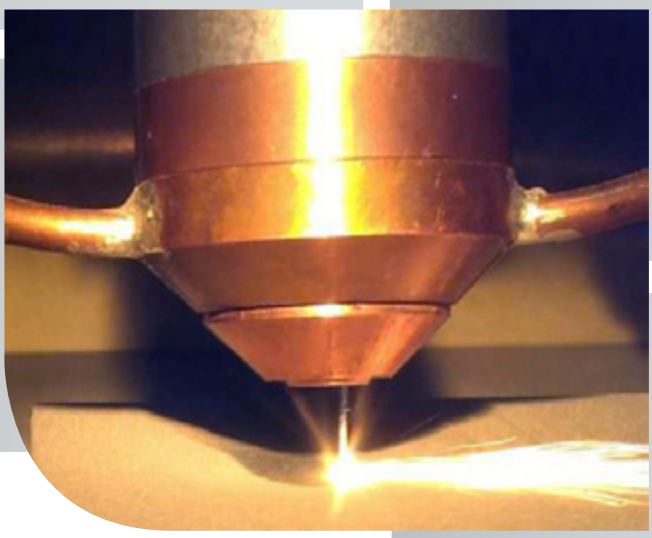
Multi-Beam Laser Additive Manufacturing

Hans Herfurth, Fraunhofer, USA

A new Multi-Beam laser processing head for additive manufacturing is being developed, build and tested. The innovation is the use two laser beams instead of a single beam. One beam is stationary while the position and movement of the second beam can be programmed.

The multi-beam approach is new and its capabilities and benefits are part of the ongoing investigation.

The multi-beam approach allows to tailor the temperature profile in the processing zone to the specific needs of the application. Improved part accuracy and the deposition of materials that are difficult to process are expected benefits of the new technology.



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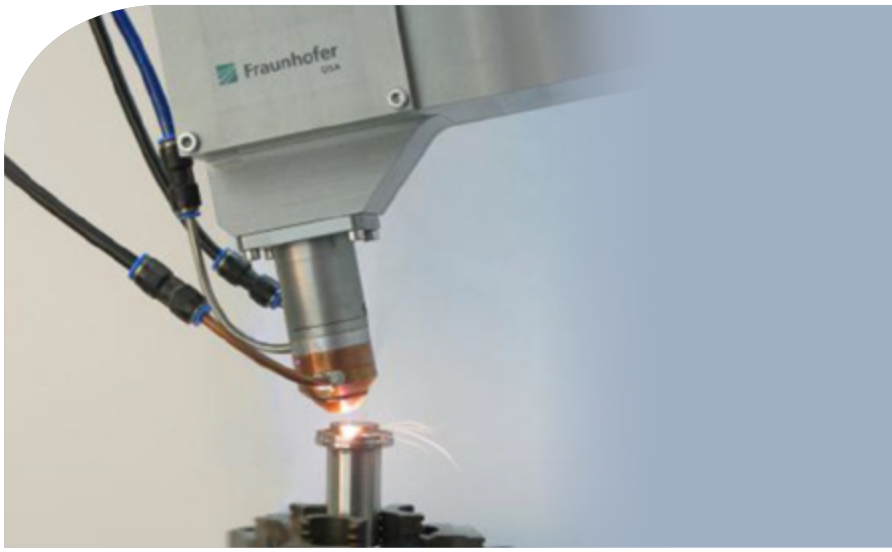
Fraunhofer USA, Inc.
46025 Port St.
Plymouth, MI 48170

Multi-Beam Laser Additive Manufacturing



Flexible, precise and efficient turn-key rapid production systems are critical for use in DoD depots and engineering centers to address requirements for repairs and replacement parts to maintain aging DoD weapons systems. Current and future readiness is severely impacted by a shrinking supplier base, low volume requirements and the lack of skilled artisans and tradesmen resulting from workforce aging. Laser Additive Manufacturing (LAM) is among key technologies innovating system repair and maintenance of metal parts. LAM is a layer-by-layer deposition process that typically utilizes a single beam with power up to multiple-kilowatts. The associated high local heat input and limited process control hamper tight manufacturing tolerances and the applicable material spectrum.

Fraunhofer is developing Multi-Beam LAM technology in collaboration with the University of Michigan and three DoD depots (Keyport, Tinker, Anniston) to address current LAM shortfalls. The new concept aims at significantly improved control of the energy input by using at least two laser beams that meet at the surface of the substrate. One of the beams is stationary and another is a movable beam that can be steered within a specific distance of the center beam. Precise control of the heat cycle during material deposition will allow processing of a wider spectrum of high-strength steels and super alloys used in jet engines and gas turbines and will also be advantageous for the deposition of gradient materials

The project team designed, built and tested a very compact robotic based system that can be easily transported and deployed at depots and other repair maintenance sites. The processing head has a size of 15" x 7"x 5" includes high-brightness diode lasers providing total laser power of 400W and a compact coaxial powder nozzle for material deposition. Current work focuses on optimizing the head's performance and on the development of specific applications defined by the participating depots.

About the presenter: Hans Herfurth is Director of the Fraunhofer Center for Laser Technology (CLT) in Plymouth, Michigan. He has more than 25 years of experience in the development and application of laser technology ranging from macro applications focused on laser surface treatment, cladding, welding, and cutting applications; to a more recent emphasis on laser micromachining. He has worked with various laser types including CO2, Nd:YAG, diode, fiber and disc lasers and has developed applications for a broad range of industries including automotive, tool and die, opto-electronic, and medical device applications.

Hans Herfurth obtained a Dipl.-Ing. in Mechanical Engineering from the University of Technology, Aachen, Germany in 1988, where he began his career with Fraunhofer at the Institute of Production Technology (IPT). He came to the U.S. in 1995 to manage Fraunhofer's cooperative activities with the Riverwork's Manufacturing Technology Center in Milwaukee, WI. He transferred to Michigan in 1997 and joined CLT, the U.S. arm of Fraunhofer's Institute for Laser Technology (ILT), also based in Aachen. Herfurth is a certified welding engineer by the German Welding Society. He holds 2 patents and has more than 25 published works.

Fraunhofer USA

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734-738-0503| hherfurth@clt.fraunhofer.com | www.clt.fraunhofer.com

1445 - 1515

Coalition Logistics Interoperability/ Joint Logistics Integration

Bob Appleton, RW Appletion & Company, Inc.

rwAppleton & co, Inc
Visionary Logistics Solutions

CLI is a suite of interrelated tools, aps, and databases that facilitate collaboration and interoperability of logistics data through better access and visibility by all partners in the joint/coalition force.

DEPLOYMENT/DEMONSTRATION LOCATIONS

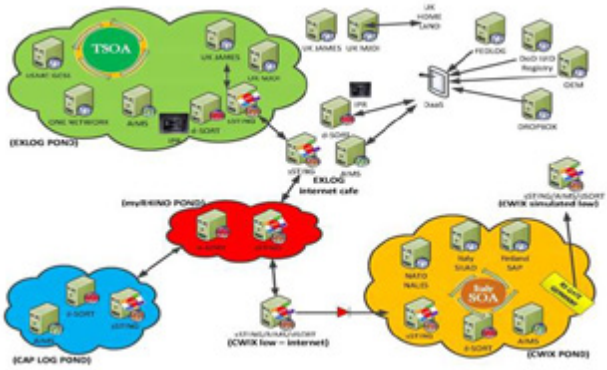
USMC EXPEDITIONARY LOGISTICS WARGAME
- Annual USMC sponsored wargame, Quantico, VA

COALITION WARRIOR INTEROPERABILITY EXERCISE
- Annual NATO sponsored IT interoperability exercise
- NATO Joint Force Training Center, Bydgoszcz, Poland

CAPABLE LOGISTICIAN
- International Logistics exercise sponsored by the Multi-National Logistics Coordination Center, Lest, Slovakia

Benefits:

- Improved readiness, availability, visibility and tracking.
- Class IX inventory reductions using operational resource sharing
- Reduction of deployed footprint
- Reduction of supply lead times.
- Accurate and auditable records for coalition partners.
- Reduction of costly expedited shipments
- Efficient redistribution of assets during turnover, drawdown and re-deployment



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RW Appleton & Company
4643 Dickenson Dr,
Sterling Heights, MI 48310

Coalition Logistics Interoperability

The CTMA Coalition Logistics Interoperability project brings together a suite of interrelated IT tools, applications and databases that facilitate collaboration and interoperability of logistics data through better access and visibility by all partners in the joint/coalition force. Using a data-centric approach, these scalable solutions are hardware agnostic, PLCS compliant and based upon international standards for ease of interoperability among coalition as well as joint service partners. The focus is on efficiency, effectiveness and ease of use by operators at all levels.

Specific tools developed, or improved during this project include the asset and service sharing Disconnected Shareable Operational Resource Tool (dSORT) which expands upon the NATO SORT tool providing improved capabilities as well as the ability to operate disconnected from the enterprise in an expeditionary environment.

Two inventory specialized inventory management applications were explored including the 2nd generation Automated Armory and Motor Pool Manager. Exchange of maintenance and repair data including IUID, pedigree data and maintenance history of assets is made possible by the improved M&R Application.

Interoperability of these applications with each other and with existing applications is provided by the PLCS based sSTING translator. sSTING acts as a hub between multiple disparate IT applications to exchange data, each in their own native format. Creating a single interface between sSTING and a given application enables that application to interface with all other apps interfacing with sSTING, eliminating the need for multiple separate APIs to interact with each desired application. This has the potential to enable GCSS-Army and GCSS-MC to collaborate.

Looking to the future, the CTMA CLI team has used this opportunity to begin exploration of logistics modernization enablers such as Data as a Service (DaaS), Service Oriented Architectures (SOA), and additive manufacturing.

About the presenter: Bob Appleton is the President of RW Appleton & Co, a logistics focused project management consulting firm. Bob has been working with both civilian and military logistics for more than 40 years.

He attended Oakland and Davenport Universities. He is retired from UPS, where he helped to develop a concept training program called UPS University.

Bob is also a retired Marine Corps Master Gunnery Sergeant. His military service includes tours of duty in Afghanistan and Viet Nam and both active duty and reserve service. These experiences, sustained military and civilian, bring a first-hand perspective of the needs and culture of both to his efforts.

One of Bob's current projects is the NATO Coalition Warrior Interoperability Exercise, a joint resource sharing exploration conducted in Europe. In addition to project management, Bob also does motivational speaking. He has produced and narrated subject-related DVDs and conference displays, and has twice received the Defense Manufacturing Excellence Award.

rwAppleton & co, Inc
Visionary Logistics Solutions

Contact Information
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1515 -1545

Hexavalent Chromium Replacement Validation Program

Timothy Hall, Faraday Technology

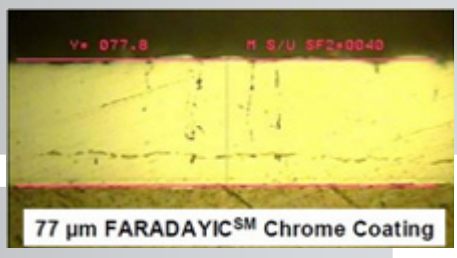
Faraday is developing a functional trivalent chromium plating process to replace hexavalent chromium plating. Hexavalent chromium plating has been used for many years to provide hard, durable coatings with excellent wear and corrosion resistance properties. However, hexavalent chromium baths have come under increasing scrutiny due to the toxic nature of the bath, effects on the environment, and workers' health. Faraday and the CTMA Project Team are developing trivalent chromium plating as a drop-in replacement for hexavalent chromium plating.

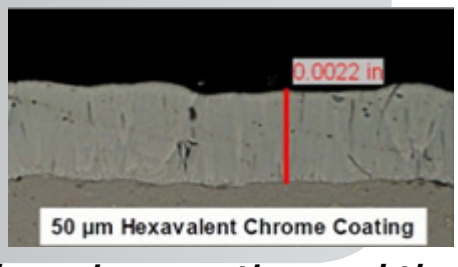
The technology is currently being tested at Faraday in a plating cell capable of producing samples for testing to industry and military standards. The intent is to successfully pass functional performance standards comparable to existing hexavalent chromium plating. To date, the new trivalent chromium process has performed comparably to hexavalent chromium for all major functional tests including thickness, porosity, adhesion, hydrogen embrittlement, hardness, surface roughness, corrosion resistance, wear and fatigue.

Additionally, the new trivalent chromium process has shown no highly toxic hexavalent chrome being generated in the plating tank.

This environmentally benign coating technology will:

- Be a drop-in replacement for hexavalent chromium plating avoiding significant cost and feasibility issues if alternative coating processes are used
- Fit both the OEM and depot production environment
- Accommodate a range of thicknesses, 1 to 20 mils or more
- Apply to both line-of-sight and non-line-of-sight part configurations
- Provide significant health and safety benefits over the hexavalent chrome plating process





Comparison between FARADAYICSM Trivalent chromium coating and the conventional hexavalent chromium plating process.

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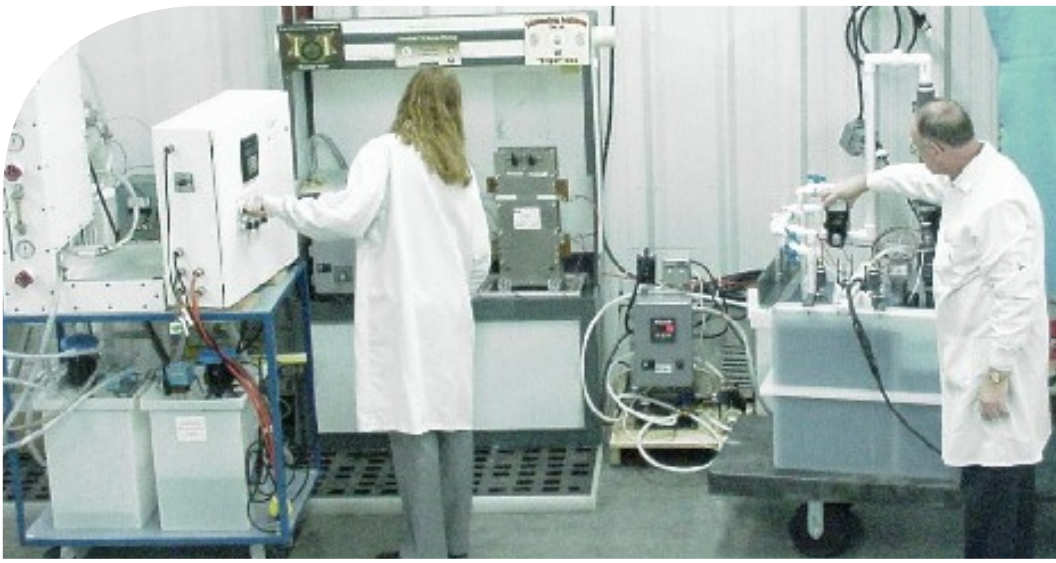
Faraday Technology, Inc.
315 Huls Drive
Clayton, OH 45315

Trivalent Chromium Coating



Faraday Technology is developing a functional chromium plating process from a trivalent-based electrolyte, addressing the need for an environmentally benign drop-in process to replace hexavalent chromium plating that can coat complex, hard-to-access surfaces such as the interior of landing gear. Hexavalent chromium plating provides hard, durable coatings with excellent wear and corrosion resistance properties. However, hexavalent chromium baths have come under increasing scrutiny due to the toxic effects on the environment and workers health. Specific to the Department of Defense, hexavalent chromium is the subject of an Undersecretary of Defense Memo to Services, 8 April 2009 to prohibit Cr+6 containing materials in future procurements, and is already a "Prohibited Material" on New Aircraft/ Weapon Systems.

This CTMA program is aimed at achieving properties comparable to existing hexavalent chromium plating and to date has shown comparable performance for thickness (up to 20 mils), porosity, hardness, plating rate, adhesion, corrosion resistance, hydrogen embrittlement, and wear resistance and fatigue properties. This plating technology is applicable to both line-of-sight and non-line-of-sight part configurations, including the internal surfaces of components such as landing gear. The work has included the development of a surface pretreatment protocol. Faraday's partners on the CTMA team are NCMS, Boeing, United Technologies, Messier-Bugatti-Dowty, Advanced Tooling Corp, CAI Resources, representatives of the Department of Defense (Fleet Readiness Center East, Corpus Christi Army Depot, OO-ALC, NAVAIR Patuxent River, Anniston Army Depot), and other noted industry experts.

About the presenter: Dr. Timothy D. Hall is a Principal Scientist at Faraday Technology. He received his dual B.S. degrees in Mathematics and Chemical Engineering at West Virginia University. In 2003, he received his M.S. and PhD. from the University of Notre Dame in Chemical Engineering in 2006 and 2007, respectively. Dr. Hall currently works on a variety of technologies, including electrodeposition of chromium, surface finishing of passive metals and alloys, and recycling of electrochemical machining electrolytes. He is an Electrochemical Society, ASM, and TMS member, and was a part of the team that received a 2011 R&D 100 Award for the development and commercialization of a cobalt-manganese coating based on FARADAYICSM Electrodeposition. Dr. Hall also has 4 patent applications currently pending.

FARADAY TECHNOLOGY, INC.

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1545 -1615

Rapid Access to Readiness Essential (RARE) Parts through Additive Manufacturing

Stacey Clark Kerwien, U.S. Army ARDEC, Picatinny Arsenal

Additive Manufacturing (AM) encompasses revolutionary manufacturing technologies that supplant traditional machining and tooling processes for fabrication and repair of legacy and hard to obtain parts. Examples of parts created include:

- UH-60 Helicopter handle replacements
- SCCM Tool set for Virginia Class Submarines
- Trim & Drain Pump Assemblies for Ohio Class Submarines
- Blast Patches for demilitarization at ARDEC
- Lower Engine Door Hat Stiffener Tool for F18 E/F aircraft

AM reduces turn-around time, labor, and material costs by 50% to 90% and provides organic capabilities to quickly replace or repair parts with substantial cost savings and readiness improvements.

Application by Armed Services

CTMA Sponsored:

- U.S. Navy: TRF Kings Bay, NUWC Keyport, NFPC Philadelphia Detachment, Portsmouth & Pearl Harbor Naval Shipyards, NAVAIR China Lake, FRC East, FRC Southwest
- U.S. Army: Anniston, Tobyhanna, Corpus Christi AD, Picatinny Arsenal (ARDEC)
- U.S. Air Force: OC-ALC

Other Government Leverage:

- DOE, NNSA – Honeywell FM&T
- NASA – Marshall Space Flight Center

Potential:
Extending use of AM to internally produce legacy and obsolete parts for weapons systems across all services, the cumulative savings to DoD could amount to $1.01B per year

Technology Integration & Depot Adoption

Realized Cost Savings: $7.05M/yr. Extended to use on same weapons systems: $465M Branch-wide; Extended to use on comparable weapons systems: $332M Branch-wide and to comparable systems DoD-wide another $215M.

Readiness: Reduces turn-around, cycle time 50-90%

Reproducibility: Part is produced directly from CAD
Design optimization, Form, Fit, Function testing, production of tooling for end parts, & additively grown end parts for low volume applications.

User Team Collaboration: shares lessons learned and AM resources to shorten the time required to make readiness-essential parts in support of the warfighter.

PLAY PRESENTATION

VIEW SLIDE DECK

22 Years of Collaboration in Additive Manufacturing

NCMS industrial members collaborating on use of RP technology within NCMS since 1991, and with DoD MPP Maintenance Activities since 1999. Collaboratively Investing over $20M.

Purposes are:

- Introduce Additive Manufacturing (AM) processes & materials for use in manufacturing & repair of hard-to-replace parts within DoD maintenance & logistics organizations
- Pilot building net-shape and near-net-shape parts, directly or indirectly using AM
- Address part qualification, cooperatively w/OSD, pursue qualification & standards approval for AM
- Provide a solution to legacy part replacement, increased readiness, cost savings and avoidance, CAD, .stl, STEP or AMF files for future part production
- Establish organic capability to implement AM for repair or replacement of parts

About the presenter: Stacey Clark Kerwien is Deputy Division Chief, Material, Manufacturing & Prototype Technology, US Army ARDEC, Picatinny, NJ.

Ms. Kerwien leads a 120 member team of engineers and technicians engaged in armaments development, engineering and prototyping. This includes optimizing materials selection and manufacturing techniques to increase functionality and producibility of materiel. Additive manufacturing, reverse-engineering, composite prototyping, forensics, corrosion-protection, nanotechnology and dual-use materials are key areas of the division technology portfolio.

Team spokesperson describing the activities of the entire RARE Parts Team (36 members from 24 organizations). Discuss ongoing support by RARE Parts Team of OSD, ASTM F-42 Committee on Additive Manufacturing, NIST AM Standardization activities, among others. Show examples of DoD AM adoption and parts that some team members have produced in support of depot activities and R&D efforts in AM.

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Not Able To Present

Common ATE Software Enhancement (CASE) Program

Hugh Pritchett, Analysis, Integration & Design Inc.

ConVEx Test Software Migration & Development Tool

AIDI

Technology

- ConVEx is a commercial off-the-shelf (COTS) technology that eliminates hardware & software obsolescence issues
- ConVEx enables the transfer of obsolete programming language code to the latest program code
- ConVEx produces publicly defined, xml, test definitions that are accessible from other environments and tools

Demonstrated Results

- No more Proprietary Hardware or Software issues
- Reduces Sprawling Logistic Footprint
- Legacy Test Program migration is accomplished with minimal effort and significantly lower cost
- Prototype is located at the NUWC depot Keyport, WA

Potential:

- APPLICABLE TO ALL DOD DEPOT REPAIR FACILITIES
- APPLICABLE TO 100s OF TEST SYSTEMS
- APPLICABLE TO 10s of 1000s of TEST PROGRAMS

Benefits (projected):

- NUWC Keyport, MK 48 Torpedo Depot, requires integration of
- 15 more TPSs. Estimated $1M savings for the MK 48 Program
- AMRDEC requires >200 depot TPSs, saving estimate $15M
- Mitigates future obsolescence issues
- Drastically reduced migration costs >75%

Project Participants

Government:

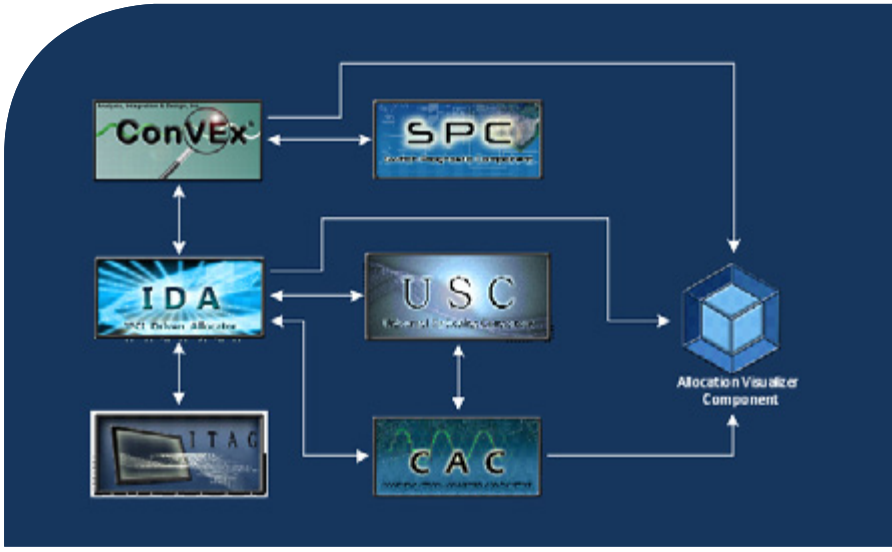
- NAVAIR Lakehurst, NJ
- NUWC Keyport, WA
- USMC TMDE, Quantico, VA
- U. S. Army AMRDEC Huntsville, AL, ATSE Prototype Program

Minimum Projected DoD (Cross Service) Savings for 1000 TPS' transition and Integration: $66M

VIEW SLIDE DECK

Analysis, Integration & Design Inc.
2905 Bush Drive
Melbourne, Florida 32935

ANALYSIS, INTEGRATION & DESIGN, INC'S (AIDI'S) ConVEx® Technologies:



Transferring Test Program Sets (TPS) from obsolete to modernized automated test systems is a challenging, traditionally engineering intensive and costly undertaking. Every DoD service is facing the daunting task of refreshing obsolete test systems and the migration of thousands of test programs from the obsolete and unsupportable test systems. TPSs come in a plethora of formats and language dialects. The spectrum of differing TPS types induces an order of magnitude in complexity for TPS transfer practitioners. An additional hurdle for accomplishing the transfer task and for avoiding the situation in the future is the variety of available target environments and platforms. AIDI'S ConVEx® software is produced to address the transfer task while ensuring future iterations do not encounter the same impediments. ConVEx® software accomplishes legacy TPS transfer into publicly defined Test Definitions (TDs) via an automated mechanism that also makes it reasonably easy to induct new legacy languages as they are encountered. ConVEx comes off the shelf ready to induct test programs produced in language dialects that were often used in the past. The TDs that ConVEx produces are not ATS dependent and are used to easily produce TPSs for new target systems. When transfer is required in the future, ConVEx® software simply uses its existing TDs to build TPSs for the new target ATS, avoiding the language diversity and technology modernization problems that exist today. ConVEx is the only commercially available product on the market that accomplishes these tasks. Ongoing fidelity and productivity enhancements are being continually injected. In particular. AIDI has a technology roadmap in place for ConVEx to achieve seamless test program integration, driving the costs of test transition to the absolute minimum. ConVEx is the only viable, comprehensive, cost effective means for transferring various TPS types from legacy to modern ATSs while mitigating the cost of future obsolescence cycles.

About the presenter: Hugh Pritchett attended Trinity University where in 1986 he received a Bachelor of Science in Engineering Science (BSES). He now has over 25 years of software, simulations and test related experience. He has worked as an RF simulations development engineer at the Electronic Combat Simulation and Environmental Laboratory at the Pacific Missile Test Center at PT. Mugu, California. He worked for the Advanced Technology Insertion Center at Kelly AFB in San Antonio, where his primary focus was digital test, simulations and functional test program development. In 1991 Hugh moved to Warner Robins, Georgia where he worked for the Warner Robins Air Logistics Center as a project manager and also a test and test systems integration engineer. Starting in 1998 Hugh was Director of Engineering at Support Systems Associates Inc. before forming Analysis, Integration and Design Inc. (AIDI) in 2004. At AIDI his team performs software development, research, test systems integration, hardware production and related project management.

AIDI

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Thank You

First, a word of thanks to all those who made the past two and a half days work: the team that planned and made it happen: Debbie Lilu who was the chief architect; Bill Chenevert, Connie Philips, Matt Heddle, Mark Carver, Phil Callihan, Andrew Green, Anita Tolen, Melissa Sullivan, and Christopher Fick who comprised the planning and execution team; Dana Ellis, Heidi Hottinger, Jeff Walker, and Mike Fancher, our West Coast program managers who helped arrange speakers and collect presentation materials; and last but not least, the Connexus tech support team that made the virtual connectivity system work. I commend all of you on a job well done. And I would be remiss if I failed to extend a very special thanks to the one guy without whom the CTMA program wouldn't even exist, Greg Kilchenstein. I would also like to thank all the speakers and panelists who participated. There were no soft spots in the agenda. The plenary speakers, the two panels, and the initiative briefs were of very high quality and delivered extremely well. I want to extend a special thanks to the industry speakers who traveled to Ann Arbor to participate in person. I congratulate all those participants and extend my sincerest thanks to them and to the many depot participants who dialed in to view and listen. All of you have my sincerest and most heart-felt thanks.

Tony Haynes
Senior Program Manager, NCMS

NATIONAL CENTER FOR MANUFACTURING SCIENCES

Biographies

RICHARD B. JARMAN

Rick Jarman is the President & CEO of the National Center for Manufacturing Sciences (NCMS) located in Ann Arbor, Michigan. NCMS is the largest cross-industry collaborative manufacturing research consortium in the United States devoted exclusively to manufacturing technologies, process and practices. Formed in 1986, the NCMS mission is focused on the development of strategic initiatives and programs aimed at sustaining and enhancing the global competitiveness of North American manufacturing.

Prior to his position at NCMS, Mr. Jarman was Director of Technology Partnerships at Eastman-Kodak Company. He was a driving force to forge alliances with industry and government in order to improve commercialization processes through innovation and new technology. Rick was responsible for managing these global relationships and programs with policy makers, partners, and consortia management in order to leverage these synergistic, strategic partnerships.

Rick serves on several industry boards and advisory groups related to his work in building collaborative alliances. Rick is the Co-author of the book “Collaborative R&D: Manufacturing’s New Tool” published by John Wiley & Sons N.Y. in April 1999.

In 2001, working with management from several major corporations including Kodak, and elected officials in federal, state, and local offices he co-founded the Infotonics Technology Center in upstate N.Y. The goal of the Center was to establish a unique, world-class research and development center in the area of photonics and related micro-systems. In support of this endeavor, a state-of-the-art prototype and pilot fabrication facility was built to enable innovation and the rapid commercialization of new products.

Mr. Jarman joined Eastman Kodak Company in 1978 with the Business Systems Markets Division where he held a number of advancing roles in field and staff marketing and management positions. In 1986 he was appointed Executive Agency Manager in Washington D.C. This position was established to integrate the strategic planning and markets development for the federal government market.

In 1988 he was selected to represent Kodak on the President's Commission on Executive Exchange. During the year he participated in the commission's program at Harvard University examining the roles of Private Industry and Government. He played a key role on the trade committee during the Commission's meetings in the USSR and Western Europe. Issues discussed included US/USSR joint ventures and the European Community plans for 1992. For the remainder of 1988, Mr. Jarman served as Special Assistant to the Assistant Secretary of Defense for Production and Logistics in the Pentagon. Here he provided executive counsel on issues such as Total Quality Management and Bolstering the Defense Industrial Base.

Returning to Kodak, Rick was named Director of International Planning for the Business Imaging Systems Division. In this role he developed alternative business strategies for Europe and provided analysis of competitors and potential alliances for marketing, manufacturing, and design in Europe and Asia.

Mr. Jarman holds a degree in Business Administration from Bloomsburg University and has performed graduate work at Penn State University in the Executive Management Program.

Thomas L. (Tony) Haynes

Senior Program Manager
National Center for Manufacturing Sciences

Prior to joining NCMS, Mr. Haynes was with Texas Instruments (TI). Prior to 1980, Mr. Haynes served as a Senior Design Engineer in TI's Semiconductor Division, working with both circuit and process design. His design successes included radiation hardened integrated circuits for the guidance control system of the Trident missile, the manufacturing process and basic circuitry design for TI's family of bipolar schottky PROMs, a data parser and display controller for the British CFAX system, and the control system for the Polaroid Sun 660Ô camera.

In 1980, Mr. Haynes transferred to TI's Industrial Systems Division where he led a team of 27 engineers and technicians designing custom and application specific integrated circuits to reduce parts count in industrial automation products. His team designed a hardware emulator for the 802.5 Token Ring interface chip set, used by IBM to refine protocols for that network which competed with the now much better known Ethernet LAN. That body of work earned Mr. Haynes peer recognition as a Senior Member Technical Staff (SMTS), an honor reserved to the top 5% of technical contributors to TI. After that he filled the role of Senior System Architect, responsible for overall system design for several industrial automation control systems; the TI 505 Series, the TI 575, and the Comau C3G robot control system designed by TI under contract to Comau, SPA.

The National Center for Manufacturing Sciences (NCMS) - After taking an early retirement option from TI, Mr. Haynes joined NCMS in 1992 as a Program Manager. His duties include forming and managing a diverse set of collaborative projects that range from advanced software systems for manufacturing applications to extremely high performance machining. He has been involved in the Commercial Technologies for Maintenance Activities (CTMA) Program in a Sr. Program Manager capacity since its inception in 1998, leading more than thirty projects over that period. In 2002, leveraging his strategic planning and business management training, he was a member of a leadership team reporting to the NCMS President that sought additional lines of business for NCMS. For three months in CY 2009 he served as interim CTMA Program Director while Dr. Charles Ryan, CTMA Program Director, was on medical leave.

Mr. Haynes is the author of several articles published in industry association technical journals, including Industrial Engineer, Modern Machine Shop, and SAE's Aerospace Engineering and Manufacturing.

Mr. Haynes' major project successes at NCMS, measured by deployment and quantifiable benefit to both DoD and industry, include; PLM for Six Sigma Part Quality, Smart Machines, High Throughput Production Processing of Five Axis Aluminum Parts (winner of the Defense Manufacturing Excellence award), and Volumetric Accuracy of Large Machine Tools (R&D 100 and Defense Manufacturing Excellence Award winner)

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Gregory Kilchenstein

Greg is an Action Officer with the Office of the Assistant Deputy Under Secretary of Defense for Maintenance Policy and Programs working technology enablers that focus on sustaining materiel readiness at best cost. Having completed his undergraduate work in aerospace engineering and graduate level studies in systems engineering at the University of Maryland, Greg began working for the Naval Sea Systems Command in 1987 as a mine warfare simulation modeler. After joining the Naval Air Systems Command in 1989, Greg was assigned as a propulsion engineer for the V-22, P-3, C-130, E-2/C-2 and had the privilege of witnessing the first flight of the V-22 in his first week with NAVAIR. Over the next 16 years with NAVAIR, Greg was the program manager for the T400 engine and Propellers Program, the Basic Design Engineer for T58 and T64 engines, the Propulsion and Power Systems Engineer for H-53, H-46, H-3 and the Presidential VH-3D, and the Propulsion and Power competency lead for vertical lift propulsion systems. Greg is married and he and his wife Stephanie have two children.

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John B Johns

Deputy Assistant Secretary of Defense for Maintenance

Mr. Johns is Deputy Assistant Secretary of Defense for Maintenance. In this position, he is responsible for oversight of the Department's annual $90 billion maintenance program.

In 2010, Mr. Johns served in Iraq as Director, Training and Advisory Mission, Iraqi Ministry of Defense, and Director, Iraqi Security Forces Logistics where he was responsible for both the full range of advisory and training functions required to establish governance of Iraqi Defense operations, as well as, develop the logistics infrastructure and processes to maintain readiness of both conventional military forces and police forces.

In past assignments, Mr. Johns has served the Army and Navy in technology development, engineering, program management, and logistics positions. His assignments with the U.S. Army Aviation and Missile Command included Associate Director for Systems, Aviation Research, Development, and Engineering Center where he was responsible for the provision of engineering support to all Army Aviation systems, Principal Assistant Deputy for Systems Acquisition where he was responsible for lifecycle management of over 20 Army aviation, missile, and ground systems with an annual budget of approximately one billion dollars, and Deputy Commander for Systems Support where he managed overhaul and maintenance, or RESET, of all aviation and missile systems redeployed from Iraq and Afghanistan. He also served as Special Assistant to the Commanding General, U.S. Army Materiel Command from July 2004 to August 2005. In August 2005, he joined the Navy as a member of the Senior Executive Service as the Director of Industrial Operations, Naval Air Systems Command, and Deputy Commander of Fleet Readiness Centers, Naval Air Forces where he was responsible for naval aviation maintenance operations across six subordinate commands, with a workforce of over 14,000 personnel and an operating budget of approximately four billion dollars, and oversaw annual maintenance and repair of over 600 aircraft, 7500 engines and modules, and 500,000 components and support equipment.

Mr. Johns holds a Bachelor of Science in Aerospace Engineering from Penn State University and a Master's in Aeronautics and Astronautics from Purdue. He is also a graduate of the National Security Management Program, National Defense University.

United States Navy
Biography

REAR ADMIRAL MARK R. WHITNEY
DEPUTY COMMANDER
LOGISTICS, MAINTENANCE AND INDUSTRIAL OPERATIONS
NAVAL SEA SYSTEMS COMMAND

Rear Adm. Whitney is a native of South Portland, Maine. He entered the Navy through the Naval Reserve Officers Training Corps program at Maine Maritime Academy where he earned a Bachelor of Science degree in Marine Engineering in 1984.

He received his surface warfare officer qualification aboard USS Luce (DDG 38). He became an engineering duty officer and attended the Naval Postgraduate School. In 1994, he earned a Master of Science degree in Mechanical Engineering and was the recipient of the Naval Postgraduate School Superior Service Award.

His engineering duty tours include: naval reactors representative assistant at Norfolk Naval Shipyard, Naval Reactors Representative's Office; assistant project officer at Supervisor of Shipbuilding, Conversion and Repair Newport News; deputy project superintendent at Norfolk Naval Shipyard; chief engineer aboard USS Theodore Roosevelt (CVN 71), completing a combat deployment in support of Operation Enduring Freedom; section head at Surface Ship Maintenance and Modernization for Director, Surface Warfare on the staff of the chief of naval operations; aircraft carrier requirements officer for Director, Air Warfare on the staff of the chief of naval operations; operations officer at Puget Sound Naval Shipyard & Intermediate Maintenance Facility; assistant deputy commander for Industrial Operations at Naval Sea Systems Command; and the 47th commander of Puget Sound Naval Shipyard & Intermediate Maintenance Facility. Whitney reported as the deputy commander, Logistics, Maintenance and Industrial Operations, Naval Sea Systems Command in June 2012.

His personal decorations include the Legion of Merit, the Defense Meritorious Service Medal, the Meritorious Service Medal with (4 Gold Stars), the Navy and Marine Corps Commendation Medal with Gold Star, the Joint Service Achievement Medal, and the Navy and Marine Corps Achievement Medal with Gold Star.

Debra Lilu
Senior Program Manager, NCMS Operations Director, CTMA Program; Education: MS Marketing Management, Rensselaer Polytechnic Institute, BS Business Administration (Marketing & Management), Eastern Connecticut State University.

Ms. Lilu has over 29 years of experience in the automotive and aerospace industries and working with the Department of Defense (DoD). Ms. Lilu has extensive expertise in managing complex, collaborative technical projects and understands how to bring new technology to commercialization. She has identified and developed new funding sources augmenting program resources and monitoring project performance through implementation and commercialization. Ms. Lilu also has strong experience directing all aspects of contract administration including presentation of company position of various contractual related matters, negotiation of contract changes and recommended disposition of rejected material. Ms. Lilu has led and continues to lead several collaborations with the DoD sustainment community.

Over the past several years Ms. Lilu has planned and orchestrated numerous workshops, ribbon cutting ceremonies, technology showcases and symposiums. A series of workshops were held across all services including: Air Force Tinker Workshop, Army Tobyhanna Workshop, Pacific Northwest Naval Shipyard, and Marine Corps Quantico. The workshops were designed to bring industry together with DoD maintenance principals to discuss DoD-specific technology needs. These workshops will focused on particular operation/process needs at other DoD maintenance facilities with the personnel responsible for these applications presenting a list of their technology needs.

Ribbon cutting ceremonies were held at Sierra Army Depot celebrating the successful pilot demonstration of the Centralized Fleet Automated Management System (CFAMS) as well as the installation of a complete laser stripping unit at the Fleet Readiness Center East. The benefits achieved at FRC East were considerable; 2X faster than traditional stripping methods with blade scrap rate reduced by 60%.

As part of the CTMA Outreach, a number of Technology Showcases were organized including Fleet Readiness Center Southwest, USMC Barstow Logistics Base, Tobyhanna Army Depot, and Marine Depot Maintenance Command. The Technology Showcases are an exclusive opportunity for NCMS members to display technologies onsite at the various DoD maintenance facilities. Industry sets up tabletop displays on the production floor at the host facility. The CTMA program is able to bring the technology to the managers, engineers and artisans and provides easy access. The first day of Showcases consist of technology displays and is followed by a day of follow-up meetings with host facility personnel on potential applications.

Annual CTMA Symposiums now referred to annual Partners meetings have been held at various maintenance facilities since 2000. The CTMA Symposium is the DoD forum to articulate and share service needs, to both industry providers as well as other DoD customers who may have similar needs, share information regarding the past years projects and ensuing products, and to network with the maintenance technology community of interest and form budding ideas and partnerships.

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Frank W. Zardecki

Deputy Commander
Tobyhanna Army Depot

Mr. Zardecki has served as the deputy commander since 1990 to the commanding officer of Tobyhanna Army Depot. An organization of approximately 5,000 personnel performing diversified logistics, administrative and related support missions.

In this position, Mr. Zardecki participates fully in the overall administration and operation of the entire depot. He provides professional guidance and assistance on all matters pertaining to depot missions, operating goals, and determination of depot resource requirements in terms of funds, facilities and personnel. He reviews and evaluates the effectiveness and efficiency of all depot missions. He also identifies and resolves critical operating problems, and determines and directs special studies and management improvement reviews.

Mr. Zardecki is a veteran of the U.S. Air Force. He began his depot career in 1966 as an electronics-mechanic helper. Since 1972, he has held a wide variety of management positions, beginning as a first-line supervisor in the Avionics Branch.

He has since progressed through increasingly responsible managerial positions in the electronics maintenance field. These included Avionics Section chief, chief of the Radio and Radar branches, Electronics Division chief, and deputy director of Maintenance.

Mr. Zardecki was the depot's first Force Modernization officer. He served as chief, Production Engineering Division, based on his experience, technical ability and managerial skills.

In 1985, Mr. Zardecki was selected for a special assignment as the civilian executive assistant at Sierra Army Depot, Herlong, Calif. This assignment included directing the ammunition and special weapons missions performed at the installation.

Mr. Zardecki attended Wilkes College, Wilkes-Barre, Pa, and the University of Scranton, Scranton, Pa., completing courses in business administration. He also has completed many Air Force and Army electronics and other technical training courses.

In addition, he has attended numerous government-sponsored courses in the field of management, including supervision, leadership, labor relations, maintenance management, the environment, automation, and Lean. He is a 1995 graduate of the Senior Executive Fellowship Program, JFK School of Government, Harvard University, Cambridge, Mass.

Throughout his career, Mr. Zardecki has been selected to serve on numerous Department of the Army and Department of Defense special studies on military logistics. He is recognized as a leader in the area of depot maintenance, labor relations and interservicing. He was responsible for the transfer of the Air Force Ground Communications Electronics workload to the Army as a result of the 1995 Base Realignment and Closure (BRAC) process.

Awards and decorations include two Decoration for Exceptional Civilian Service Awards, Meritorious Civilian Service Award, four Superior Civilian Service Awards, Commander's Award for Civilian Service and numerous performance and special service awards. In January 2012, he was recognized for 50 years of federal service.

Mr. William L. Braddy

Deputy to the Commander for Maintenance Operations

Mr. William "Bill" L. Braddy joins us from the Systems Engineering Group (SEG) of QinetiQ North America (formerly Westar Aerospace and Defense Group). He served as the Senior Vice President for Business Performance located in Huntsville, AL. His responsibilities included business integration, quality management, strategic planning, program finance, and facilities management. His company earned both ISO 9001-2008 and the Capabilities Maturity Model Integrated (CMMI) Level 3 certifications while Bill was with them.

He has other business experience as well as military experience. Prior to Westar, he was the Director of Operations for the Recall Corporation headquartered in Atlanta, GA. His responsibilities included 51 facilities and 500 folks across the United States and Canada.

Previously, he served as Vice President for Engineering and Product Development with Schneider National in Green Bay, WI. His team specialized in transportation network optimization and data warehouse development. Schneider uses the ten+ terabyte data warehouse for operations, data mining, and business performance management.

Bill completed a 26 year Army career in 1998. His experience includes armor and aviation command from company through brigade. He served as the Division Chief of Staff and Aviation Brigade Commander in the 101st Airborne Division, and on the Joint Staff in the Pentagon. He also served as the Deputy Director, J-7, Joint Forces Readiness Command, in Suffolk, VA. Bill is a graduate of the Industrial College of the Armed Forces in Washington D.C.

He holds a Bachelor of Science in Industrial Engineering from Texas A&M and a Master of Science in Operations Research from Kansas State University.

Trent P. Blalock
Deputy Commander / Business Operations
Marine Depot Maintenance Command
Albany, Georgia

Message from Mr. Trent P. Blalock

Mr. Trent Blalock serves as the Deputy Commander/Business Operations, Marine Depot Maintenance Command – a nearly billion-dollar industrial repair facility that generates over $300M in annual revenues. It is a multi-commodity remanufacturing facility that provides repair, rebuild and overhaul of Marine Corps ground combat and combat support equipment and employs more than 2,000 personnel. The Maintenance Center is essential to the Marine Corps' warfighting capabilities and has become an enabler to our Marines that go in harms way.

Having spent five years working in retail sales with Firestone Tire and Rubber Company, he began his service with the government in 1989 as the supervisor of the Marine Corps Industrial Fund Accounting Section, Marine Corps Logistics Base, Albany, GA. Transferring to the Maintenance Center in 1992, he served as the Manager of the Business Department for six years. In November 2001, Trent became the Deputy Commander/Industrial Operations Manager and has led his organization to become a world-class depot repair facility that is well respected throughout the Department of Defense for its innovations and productivity enhancements.

Trent received his Bachelor's degree in Business Administration (Accounting) from Valdosta State University in 1983 and is a 2002 graduate of the Executive Potential Program. Additionally, he is a member of American Society of Military Comptrollers and Federal Managers Association. In 2006, he received the Department of Navy Superior Civilian Service award.

COLONEL TOM D. MILLER

Col. Tom D. Miller is Vice Commander, Ogden Air Logistics Center, Hill Air Force Base, Utah. The center provides worldwide logistics management, engineering, supply, contracting and depot maintenance for a wide variety of aircraft and munitions related platforms. He is responsible for the 75th Air Base Wing, 309th Maintenance Wing and the Aerospace Sustainment Directorate.

Colonel Miller earned his commission through the Air Force ROTC program at the University of Texas at Arlington in 1990. He has served in a variety of logistics and maintenance positions at the squadron, wing, and headquarters level and deployed to Operations Provide Comfort, Iraqi Freedom and Enduring Freedom. He commanded maintenance squadrons both in the United States and in Iraq and commanded a maintenance group in Afghanistan. He served on both the Air Staff and the Joint Staff where he was responsible for equipment reset integration and sustainment review of all major weapon systems prior to approval by the Joint Requirements Oversight Council.

Colonel Miller is Level II certified in life cycle logistics and is a designated Joint Qualified Officer.

EDUCATION
1990 Bachelor's degree in management, University of Texas at Arlington
1993 Master's degree in business administration in aviation, Embry Riddle Aeronautical University
1995 Squadron Officer School, Maxwell AFB, Ala.
2003 Master's degree in military art and science, Air Command and Staff College, Air University, Maxwell AFB.
2006 Air War College (by correspondence).
2008 Advanced Program in Logistics and Technology, Kenan-Flagler School of Business, University of North Carolina, Chapel Hill, N.C.
2009 Joint Professional Military Education Phase II, Joint Forces Staff College, Norfolk, Va.
2010 National Defense Fellowship with a Certificate of Public Leadership, The Brookings Institution, Washington D.C.

ASSIGNMENTS
1. April 1991 - August 1991, student, Aircraft Maintenance Munitions Officer Course, Chanute AFB, Ill.
2. September 1991 - August 1993, Armament Flight Commander, 58th Maintenance Squadron, and Officer in Charge of Maintenance, 555th Fighter Squadron, Luke AFB, Ariz.
3. September 1993 - December 1995, Squadron Maintenance and Logistics Test Officer, F-15 and F-16 Combined Test Forces, Edwards AFB, Calif.
4. January 1996 - April 1999, Sortie Generation Flight Commander, 492nd Fighter Squadron, and Installation Deployment Officer, 48th Fighter Wing, Royal Air Force Lakenheath, England.
5. May 1999 - July 2002, Chief of Field Grade Maintenance Officer Assignments and Executive Officer to the Director of Assignments, Air Force Personnel Center, Randolph AFB, Texas
6. August 2002 - June 2003, student, Air Command and Staff College, Maxwell AFB.
7. July 2003 - July 2005, Commander, 4th Component Maintenance Squadron, Seymour Johnson AFB, N.C. (September 2004 - January 2005, Commander, 332nd Expeditionary Maintenance Squadron, Balad Air Base, Iraq)
8. July 2005 - June 2007, Deputy Chief, Program Integration Branch "A4/7 Engine Room" and executive officer, Deputy Chief of Staff for Logistics, Installations and Mission Support, Headquarters U.S. Air Force, Washington D.C.
9. July 2007 - June 2009, Chief, Maintenance Division, Directorate of Logistics, The Joint Staff, Pentagon, Washington, D.C.
10. July 2009 - May 2010, National Defense Fellow, The Brookings Institution.
11. June 2010 - June 2011, Commander, 455th Expeditionary Maintenance Group, Bagram Air Field, Afghanistan
12. July 2011 - present, Vice Commander, Ogden Air Logistics Center, Hill AFB.

SUMMARY OF JOINT ASSIGNMENTS
1. July 2007 - June 2009, chief, Maintenance Division, The Joint Staff J-4, the Pentagon, Washington, D.C.

MAJOR AWARDS AND DECORATIONS
Bronze Star Medal with one oak leaf cluster
Defense Meritorious Service Medal
Meritorious Service Medal with three oak leaf clusters
Air Force Commendation Medal with one oak leaf cluster
Afghanistan Campaign Medal with one device
Iraq Campaign Medal with one device
National Defense Service Medal with one device
Global War on Terrorism Service Medal
NATO Medal

EFFECTIVE DATES OF PROMOTION
Second Lieutenant Nov. 1, 1990
First Lieutenant Nov. 1, 1992
Captain Nov. 1, 1994
Major Dec. 1, 2001
Lieutenant Colonel March 1, 2006
Colonel Oct. 1, 2009

Commanding Officer

COL. Blayne H. Spratlin

UNITED STATES MARINE CORPS

Colonel Blayne H. Spratlin enlisted in the U.S. Marine Corps in 1980, and graduated from 3rd Recruit Training Battalion, Marine Corps Depot, Parris Island, S.C. He next reported to Weapons Co., lst Bn., 9th Marine Regiment, 1st Marine Division, at Marine Corps Base, Camp Pendleton, Calif., as an 81mm mortarman, where he held various billets in the Heavy Weapons Co., and was meritoriously promoted to corporal and sergeant. As his tour in the 1st Marine Division was ending in 1983, he was accepted into the Marine Corps Enlisted Commissioning Program.

He attended The Citadel in Charleston, S.C., as a sergeant of Marines and majored in Pre-Law. He graduated with honors (Summa Cum Laude) in 1986. After commissioning, attending The Basic School, and becoming an aviation logistics officer at Navy Supply Course School, Athens, Ga., he joined Headquarters and Maintenance Squadron 39, 3rd Marine Aircraft Wing. He also attained the secondary military occupational specialty aircraft maintenance officer in 1989. In 1990, he was attached to Marine Aircraft Group 50 and participated in operations Desert Shield and Desert Storm.

In 1991, Spratlin received orders to MCRD Parris Island, where he served as a series commander and as a company commander. In 1994 he accepted a reserve commission and left active duty. He returned to active duty in 1997 and reported to MAG-49 at Naval Air Station, Willow Grove, Penn., where he oversaw the successful transition from the CH-53D Sea Stallion to the CH-53E Super Stallion, and the additions of the AH-1W Super Cobra and UH-1N Huey helicopters to the MAG-49 inventory.

In 1998, he reported to Marine Forces Reserve in New Orleans, where he served as the assistant Wing logistics officer, the Wing fiscal officer, and managed the 4th Marine Aircraft Wing Flight Hour Program. In 1999, Spratlin reported to Marine Corps Air Station, New River, N.C., as the aviation logistics officer for MALS-29, and was instrumental in preparing the Relational Supply and Optimized NALCOMIS databases as the prototype MALS for the Navy and the Marine Corps.

Spratlin next traveled to Hawaii, where he served three years at Marine Forces Pacific as the Aviation Logistics Department Future Combat Operations and Plans Branch officer in charge, U.S.

Mr Steven J. Morani BIOGRAPHY

Mr. Morani is the Deputy Chief, Maintenance Division, Joint Staff Logistics Directorate (J-4). Prior to assuming his current duties, he spent over 28 years on active duty in the Unite States Air Force and retired at the grade of Colonel in July 2011. He is a career logistician with experience in Department of Defense, joint and coalition logistics. He has held a variety of leadership positions in logistics at the headquarters, depot, and field levels to include aircraft and munitions maintenance, program management, and materiel support. He also has extensive experience leading and developing both maintenance technical training, and advanced maintenance training and education. While on active duty, Mr Morani was responsible for establishing the Joint Staff J-4, Maintenance Division in 2006 and was the first J-4 Maintenance Division Chief. Prior to assuming his current duties, he was the Chief of the Materiel Support Division, Headquarters U.S. Air Force.

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Dr. Jeffrey Marqusee is currently the Executive Director of the Strategic Environmental Research and Development Program (SERDP) and the Director of the Environmental Security Technology Certification Program (ESTCP). SERDP is a tri-agency (DoD, DOE, and EPA) environmental research and development program managed by the Department of Defense. SERDP supports research and development to solve environmental issues of relevance to DoD. ESTCP is a DoD wide program designed to demonstrate innovative environmental and energy technologies at DoD facilities. ESTCP provides for rigorous validation of the cost and performance of new environmental and energy technologies in cooperation with the regulatory and end-user communities. Prior to his current position, Dr. Marqusee served as a program manager for environmental technology in the Office of the Deputy Under Secretary of Defense for Environmental Security. He was the principal advisor to the Deputy Under Secretary on environmental technology issues. Before joining DoD, he worked at the Institute for Defense Analyses, where he advised both DoD and NASA in the areas of remote sensing, environmental matters, and military surveillance. Dr. Marqusee has worked at Stanford University, the University of California, and the National Institute of Standards and Technology. He has a Ph.D. from the Massachusetts Institute of Technology in Physical Chemistry.

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BIOGRAPHICAL SKETCH
Richard A. Hays

Rich Hays currently serves as the Deputy Director of Corrosion Policy and Oversight (CPO) in the Office of the Under Secretary of Defense for Acquisition, Technology and Logistics. Prior to coming to his current position in 2010, he spent 27 years as a manager and corrosion engineer for the Naval Surface Warfare Center, Carderock Division (NSWCCD). Mr. Hays holds Bachelor's and Master's Degrees in Materials Engineering from VA Tech.

In his current position, Rich is responsible for the development of corrosion-related acquisition policy, implementing CPO's corrosion research and technology program, and for oversight of major defense acquisition programs.

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Kurt Doehnert is a senior Industrial Engineer with the Naval Sea Systems Command (NAVSEA) in Washington DC. He is employed in the Naval Shipyard Management Group (SEA 04X), Process Engineering Division. His responsibilities include program and project management for technology development and application for ship maintenance and repair in the four Naval Shipyards (Portsmouth, Norfolk, Puget Sound, and Pearl Harbor). He represents NAVSEA on the Navy Repair Technology (REPTECH) Working Group, has been a JTEG Principal for over 10 years, and is an active participant with CTMA.

Kurt received a B.S. Industrial Engineering from the State University of New York at Buffalo. He started his career at the [former] Mare Island Naval Shipyard in Vallejo CA.

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PERSONAL BIOGRAPHY

Name: Thomas R. Spitler
Go-by Name: Tom
Duty Section: AFSC/LGMI
Duty Title: Technical Lead (Industrial Engineer)

Current Duties

Matrixed engineer from AFSC/EN to AFSC/LGMI; Maintenance & Supply Support Division
Serves as Technical Lead/Deputy Branch Chief for AFSC/LGMI; Modernization and Investments Branch
Prepares technical/engineering assessments and staff responses/recommendation for depot maintenance programs/mission areas (infrastructure investment, technology transition and environmental management)
Working Groups: Joint Technology Exchange Group (JTEG) - AF Principal; Sustainment Technology Engineering Working Group, Innovation and Technology Insertion Team, Complex of the Future (CoF)

Civilian Education/Degrees

Bachelor of Science Industrial and Systems Engineering (BISE), University of Dayton, 1973
Master of Science Management Science (MSMS), University of Dayton, 1984

Certification

Systems Planning, Research, Development & Engineering (SPRDE), Systems Engineering – Level III, 2010
Program Management – Level I, 1994
Acquisition Logistics – Level I, 1994

Previous Experience

Industrial Engineer, (1973-1975) – Trainee; HQ staff studies and decision analysis
Industrial Engineer, (1975-1980) – Developed/programmed wartime manpower simulation models
Industrial Engineer, (1980-1982) – Information systems program manager for engines and aircraft
Industrial Engineer, (1982-1987) – Work methods and standards program manager; methods improvement
Maintenance Specialist, (1987-1991) – Information/decision support system program manager
Maintenance Specialist, (1991-1993) – Resource/information system management branch chief
Industrial Engineer, (1993-2003) – program lead for depot maintenance capital purchases program; program Oversight: working capital budget and program execution
Environmental Engineer, (2003-2006) – Depot modernization and environmental branch chief; program oversight: depot capital infrastructure, environmental/pollution prevention, and depot technology/transition
Industrial Engineer, (2006-2012) – Modernization and investments branch technical lead (HQ AFMC); program oversight: depot capital infrastructure, environmental/pollution prevention, and depot technology/transition

Email: thomas.spitler@wpafb.af.mil

Greg Russell

EDUCATION

A native of Flora, IL, Greg graduated from Flora Township High School. After graduation, he enlisted in the US Navy MC where he served 8 years with the US Navy from 1973 to 1981 as a Machinist Mate aboard FBM submarines.

Following his Naval service Greg graduated from Limestone College in 1986 with a Bachelor of Science in Industrial Technology.

PROFESSIONAL EXPERIENCE

Greg has worked as a defense contractor with several companies and has 25+ years of experience in technology insertion.

Industrial Engineer/Program Manager, September 1998 to Present United States Marine Corps

Provided program management support to USMC Logistics Command (LOGCOM, Albany GA, Barstow CA, and Blount Island, FL {USMC Prepositioning Fleet}) for the LOGCOM Technology Insertion Program. This support included the identification of problem areas in the maintenance depots and the resultant concept development of new technical projects to resolve the problems. This support included the development and submittal of funding requests from various funding arms of the DoD (MANTECH, OSD, ONR, SERDP, ESTCP, CPP, CTMA, etc.). These requests also required the development of a business case analysis, and in the case of new unproven technologies/processes, the identification of research and evaluation resources (NAVSEA, Army Research Lab, Penn State, Mercer University, SBIR, NDCEE, etc.). Support also included the management of outside contractors, time schedules, budgets, development of test parameters, and technology insertion. Other taskings included supporting the Inspector General in conducting surveys of USMC industrial facilities in numerous locations to assess safety, moral, technical and environmental conditions.

Developed and delivered briefs in support of LOGCOM initiatives for various joint organizations and conferences (Joint Technology Exchange Group, Depot Strategy and Modernization Conference, National Center for Manufacturing Sciences {NCMS) Symposium, NAVSEA, etc.). This included the exchange of engineering research data.

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Robert E. Kestler– Science & Technology Lead

Mr. Robert Kestler has held the position of Science & Technology Lead at Fleet Readiness Center - East (FRC East) within the Naval Air System Command (NAVAIR) since 2007. He also serves as the liaison for the Fleet Readiness Centers to the Naval Aviation Enterprise Chief Technology Office. In this capacity, Mr. Kestler is responsible for providing and overseeing the Science & Technology portfolio for the Fleet Readiness Centers, assisting in the implementation of new technologies, identifying new technology requirements for the FRCs, interfacing and collaborating with universities, private industry, DoD Laboratories, and other DoD services concerning Sustainment needs. Many of his current efforts are in the area of additive manufacturing, advanced composite repair, and corrosion.

Mr. Kestler has held various in-service engineering roles during his twenty-two year tenure with NAVAIR. Mr. Kestler earned a Bachelor of Science degree in Materials Science and Engineering from North Carolina State University in 1990 and a Masters of Business Administration from Boston University in 2001. He began his professional career as a Materials Engineer in the Metal and Ceramics Branch at Fleet Readiness Center - East where he worked in the areas of failure analysis, welding, heat treating, and electroplating. Mr. Kestler assumed the role of Inorganic Coatings Team Lead for FRC East in 2000. In this capacity, he served as the senior engineer responsible for coordination of inorganic coating processes at FRC East with respect to coating application science, evaluation and development of new coatings and application technologies, and coordination of implementing technologies in Production. He was responsible for the engineering and chemistry of inorganic coatings, corrosion protection, material compatibility, and the science of coating application with respect to substrate characteristics and the operating environment of military aircraft. Mr. Kestler's more notable efforts were his work with high velocity oxy-fuel thermal spray, cold spray, and alternative technologies to cadmium and chromium electroplating. In addition he served as a subject matter expert in the area of inorganic coatings for the F-135 engine program.

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Robert Dittmann

Robert graduated from Auburn University in 1976 and 1978 and was commissioned into the Regular Army Ordnance Corps in August 1978.

He served an assortment of assignments from platoon leader of an Army DS/GS maintenance unit; to EOD commander of a chemical/nuclear unit; to deputy commander of Lake City Army Ammunition Plant, to contracting officer at the US Army Aviation and Missile Command [AMCOM – then MICOM]. He served with the 1st Armored Division in Desert Storm as the Division Ammunition Officer and the Chief of the Division Materiel Management Center {DMMC]. A graduate of the Army Command and General Staff College, he served as the Ammunition Transportation officer at the US Transportation Command [USTRANSCOM], the J4 in Haiti for US Forces -- Haiti [USFORHAITI] and G4 for the 1st Corps Support Command [COSCOM] at Ft Bragg, NC. Robert retired from the uniform service in August 1998.

Working as a Department of Army civilian [DAC] at Headquarters, Army Materiel Command [AMC] Robert has worked an assortment of assignments within the depot maintenance, operational and strategic planning areas. He is presently the Army Maintenance Inter-Service Management Officer [MISMO].

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