Welcome, and thank you for joining us for Deloitte’s second annual discussion forum focused on additive manufacturing (AM) in defense.

In an era of unsustainable defense budgets and increasingly complex enemies, advanced manufacturing holds the potential to help the United States meet its mission and responsibilities in both arenas. The technologies in this rapidly evolving space can increase performance and efficiencies, improve combat capabilities in the field, and unlock cost savings—but how do we get there?

At the second annual forum, we will go far beyond a technical review, striving to convene a community of interested and knowledgeable parties to drive deployment of these technologies forward with greater speed and success. Deloitte—a platinum-level member of America Makes, a public-private partnership established to accelerate AM—pairs technical expertise with a deep understanding of the strategic, talent, and systems integration issues that often prevent technology, at any level of maturity, from realizing its full potential for the organizations that invest and depend upon it.

To create this community, we bring together a variety of experts from a cross-section of governmental and private sector sources to drive a deeper level of understanding about key considerations, obstacles, and enablers in AM, including:

- Digital thread and technologies
- Qualification, certification, and standards
- The future of AM in defense
- Key considerations for workforce development

We hope you find the forum engaging and productive. We welcome your feedback and thank you again for your participation.

Best regards,

Mark Cotteleer, Kelly Marchese, and General Chuck Wald
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| 9:00  | Welcome                                                                 | **Mark Cotteleer**, Deloitte  
**General Chuck Wald**, Deloitte                                                      |
| 9:30  | Keynote                                                                 | **Vice Admiral Philip Cullom**, US Navy                                           |
| 10:00 | Advancing the Additive Manufacturing Business Model: Intellectual Property Considerations | **Matt Widmer**, Deloitte                                                      |
| 10:30 | Break                                                                   |                                                                                 |
| 10:40 | Digital Thread Demo                                                    | **Jim Joyce**, Deloitte                                                          |
| 11:05 | Quality, Certification, and Standards                                  | **Ian Wing**, Deloitte                                                          |
| 11:10 | Using Physics-Based Tools for Rapid Qualification of Parts             | **Ade Makinde**, GE Global Research                                              |
| 12:00 | In Process Sensing for Laser Powder Bed Fusion and Directed Energy Deposition | **Paul Boulware**, EWI                                                       |
| 12:35 | Lunch — Entrance Hall Display                                          |                                                                                 |
| 1:00  | Adventures in 3D Printing, Roadmapping, and Public-Private Partnerships | **Rob Gorham**, America Makes                                                   |
| 1:30  | Military Services Panel                                                |                                                                                 |
|       | **Facilitator:**                                                       |                                                                                 |
|       | **Mark LaViolette**, Deloitte                                          |                                                                                 |
|       | **Panelists:**                                                         |                                                                                 |
|       | **Greg Kilchenstein**, Office of the Secretary of Defense (Maintenance) |                                                                                 |
|       | **Captain Frank Futcher**, Office of the Chief of Naval Operations      |                                                                                 |
|       | **Lieutenant Colonel Howard Marotto**, US Marine Corps                  |                                                                                 |
|       | **Tony Delgado**, Defense Logistics Agency                             |                                                                                 |
|       | **Scot Seitz**, US Army, Logistics Innovation Agency                    |                                                                                 |
|       | **Colonel Patrick Kumashiro**, US Air Force                            |                                                                                 |
| 2:30  | Break                                                                   |                                                                                 |
| 2:45  | Workforce Development Panel                                           |                                                                                 |
|       | **Facilitator:**                                                       |                                                                                 |
|       | **Kelly Marchese**, Deloitte                                          |                                                                                 |
|       | **Panelists:**                                                         |                                                                                 |
|       | **Leanne Gluck**, America Makes                                       |                                                                                 |
|       | **John Forsythe**, Deloitte                                           |                                                                                 |
|       | **Colonel Patrick Kumashiro**, US Air Force                            |                                                                                 |
| 4:00  | Closing Remarks                                                        | **Mark Cotteleer**, Deloitte                                                   |

*Speakers/topics subject to change without notice*
## Detailed Agenda

### 9:00 – 9:30 AM

**Welcome**

*Speakers:*
- Mark Cotteleer, Deloitte
- General Chuck Wald, Deloitte

### 9:30 – 10:00 AM

**Keynote**

*Speakers:*
- Vice Admiral Philip Cullom, US Navy

### 10:00 – 10:30 AM

**Advancing the Additive Manufacturing Business Model: Intellectual Property Considerations**

*Abstract:*
Additive manufacturing (AM) technologies are changing the way in which physical products are being designed and produced. The very thing that makes AM such a powerful manufacturing option — the ability to print a product or part anywhere, on any printer equipped to handle it — is precisely what creates intellectual property (IP) risks. In order to avoid expensive legal disputes between stakeholders, the Department of Defense, Defense Contractors, and other businesses need to consider the IP aspects of AM. Instead of waiting for the slow development of IP law to play out, stakeholders should be proactive in evaluating and addressing IP concerns. In doing so, new business models can thrive that provide better value to stakeholders while simultaneously reducing risk and cost.

*Speakers:*
- Matt Widmer, Deloitte
10:40 – 11:05 AM
Digital Thread Demo

Abstract:
Additive manufacturing has been around for over 30 years and shown that it can produce parts previously unreducible and favorably impact supply chain economics. However, it has yet to achieve scale adoption and use. The building of digital threads around additive manufacturing may change this.

Speakers:
Jim Joyce, Deloitte

11:05 – 11:35 AM
Using Physics-Based Tools for Rapid Qualification of Parts

Abstract:
Additive manufacturing (AM) or 3D printing is a process for making net or near-net shape parts directly from a digital model for making make prototype or functional parts. There are several types of AM processes using laser, electron beam and ink-jetting processes. Three different types of materials are generally used in AM and these include thermoplastics, ceramics and metal alloys either for making prototype or functional parts. Our talk will focus on the use of physics-based modeling to design and produce complex metal functional parts applicable to the aviation, gas turbine, automotive, healthcare, and tooling industries.

Qualification of additively manufactured parts is a major challenge at the moment due to a number of defects that form during the build process. The most important of these defects include distortion, cracking, microstructure and porosity. All of these defects are directly affected by the process parameters such as powder size and distribution, layer thickness, beam power, speed, hatch spacing, and scanning path trajectories. We shall discuss how the application of the modeling tools is helping gain a better understanding of the AM process and being used to reduce variability in part quality through minimization or elimination of defects; thus enabling faster qualification of the parts. Challenges that the modeling tools need to overcome in order to gain wider acceptance in the AM industry will also be highlighted.

Speakers:
Ade Makinde, GE Global Research
Simulation and Modeling of the Metal Powder Bed Fusion Additive Manufacturing Process

Abstract:
Qualification of parts produced using laser powder bed fusion additive manufacturing is broadly recognized as a significant challenge. Physics-based models have been identified as being foundational to qualification of AM metal parts. In this presentation, we discuss a multiscale modeling. This includes a model at the scale of the powder that simulates single track/single-multi layer builds, and provides powder bed and melt pool thermal data. A second model computationally builds a complete part and predicts manufactured properties (residual stress, dimensional accuracy) in 3D. Modeling is underpinned by extensive experimental validation and is tied to experiment through data mining.

Speakers:
Wayne King, Lawrence Livermore National Laboratory

In Process Sensing for Laser Powder Bed Fusion and Directed Energy Deposition

Abstract:
The ability to detect defects in process will lead to the overall manufacturing robustness of metal additive manufacturing for both new production and repair applications. In this presentation, strategies for in process inspection will be presented for two processes: laser-powder directed energy deposition (LP-DED) and laser powder bed fusion (L-PBF). Both strategies employ the use of a variety of sensors that interrogate the process locally, globally, and in a passive manner. Experimental results will be presented for in process sensing of L-PBF processes using a custom sensor test bed platform that was developed to minimize the physical and software constraints of commercial systems. The results of structured experiments to produce and detect porosity, lack of fusion, and geometric intolerance will be presented. In addition, other observations about the metallurgical evolution of the material using sensors such as the local and global thermal camera will be discussed.

Speakers:
Paul Boulware, EWI

Adventures in 3D Printing, Roadmapping and Public-Private Partnerships

Speakers:
Rob Gorham, America Makes
**1:30 – 2:30 PM**

**Military Services Panel**

*Abstract:*
Deloitte’s Mark LaViolette — an experienced Supply Chain professional and retired U.S. Marine Corps Colonel with more than 29 years of experience leading teams solving supply chain, logistics, resource allocation, requirements determination, and acquisition governance challenges facing the Federal Government — will facilitate a conversation with leading experts from the Department of Defense (DoD) and military services, including the Assistant Secretary of Defense for Logistics & Materiel Readiness’ Maintenance Policy & Programs, the Office of the Chief of Naval Operations, the US Marine Corps, the Defense Logistics Agency, and the US Army. Panelists will discuss additive manufacturing needs, challenges, strategies, and the way forward for their agencies, and how these efforts fit into DoD’s strategy as a whole.

*Facilitator:*
Mark LaViolette, Deloitte

*Panelists:*
Greg Kilchenstein, OSD Maintenance Policy and Programs
Captain Frank Futcher, Office of the Chief of Naval Operations
Lieutenant Colonel Howard Marotto, US Marine Corps
Tony Delgado, Defense Logistics Agency
Scot Seitz, US Army, Logistics Innovation Agency
Colonel Patrick Kumashiro, US Air Force

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**2:30 – 2:45 PM**

**Break**

**2:45 – 4:00 PM**

**Workforce Development Panel**

*Abstract:*
In this session, expert panelists from America Makes, Deloitte, and US Air Force will discuss the challenges and strategies associated with building a workforce ready to tackle the complex and evolving field of additive manufacturing. Facilitated by Deloitte’s Kelly Marchese — a leader in Deloitte’s Supply Chain Strategy & Manufacturing Operations practice — the panelists will delve into the challenges and strategies around enabling a willing and able workforce, best practices for workforce planning and talent management, immersive learning, and other learning strategies necessary to realize the value opportunities offered by additive manufacturing.

*Facilitator:*
Kelly Marchese, Deloitte

*Panelists:*
Leanne Gluck, America Makes
John Forsythe, Deloitte
Colonel Patrick Kumashiro, US Air Force

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**4:00 – 4:15 PM**

**Closing remarks**

Mark Cotteleer, Deloitte
Speaker bios
A native of Flossmoor, Illinois, Vice Adm. Philip Cullom graduated with distinction from the US Naval Academy with a bachelor’s degree in Physics. He also holds a master’s degree in business administration with distinction from Harvard Business School.

At sea, he has served at sea aboard USS Truxtun (CGN 35), USS Jesse L. Brown (FF 1089), USS Dwight D. Eisenhower (CVN 69), and USS Mobile Bay (CG 53), participating in numerous exercises and counter-narcotics patrols as well as Operations Desert Storm and Southern Watch. During the Kosovo Crisis, he commanded USS Mitscher (DDG 57), deploying to the Mediterranean, Adriatic, and North Sea. As commander, Amphibious Squadron 3, he served as sea combat commander for the first Expeditionary Strike Group (ESG 1) in support of Operations Iraqi Freedom and Enduring Freedom and, subsequently, as chief of staff to Commander, 2nd Fleet/Striking Fleet Atlantic. Most recently, from June 2007 to August 2008, he commanded the Eisenhower and George Washington Strike Groups, as commander, Carrier Strike Group 8.

Ashore, he has served in technical, staff, policy, and strategy positions as shift engineer and staff training officer of the A1W nuclear prototype at the Idaho National Engineering Laboratory; special assistant to the CNO’s Executive Panel (OP-00K); and, branch head for Strategy and Policy (N513). Joint assignments have included defense resource manager within the J-8 Directorate of the Joint Staff; white house fellow to the Director of the Office of Management and Budget; and, director for Defense Policy/Arms Control on the National Security Council staff.

Paul joined EWI in 2004 in the Laser Processing group running experimental trials on several Laser and Laser-Hybrid projects. In 2006, he became a Graduate Fellow in the Design, Controls, & Automation group where he worked on sensory solutions for real-time quality monitoring of arc welding. Since being promoted to a Project Engineer in 2007, and Applications Engineer in 2009, Paul has expanded EWI’s sensing capabilities to other materials joining processes. He has developed software for monitoring force and temperature in the friction stir process, arc light variation in the welding processes, algorithms for measuring weld bead characteristics, and infrared-based induction heater control.

In the testing and inspection realm of materials joining, Paul has constructed standalone applications for controlling and monitoring pipe-fatigue tests, and developed custom solutions for synchronizing high-speed image acquisition with stress-strain data. Paul has also developed a patented technique for measuring spot weld integrity using matrix phased-array ultrasonic testing and custom probes.

On the manual side of welding, Paul is the lead engineer for the product development of a tool for measuring manual welding skill. Using optical tracking techniques, this tool tracks and translates welder motions into key torch manipulation variables while welding. These measurements are used for training or quality control purposes.
Tony Delgado leads the Logistics Research and Development (R&D) program for Additive Manufacturing (AM) valued at $5M/year at the DLA HQs, Fort Belvoir, Virginia. Under Tony’s leadership, DLA is partnering with Industry, Academia, and the Military Services to accelerate the adoption of additive manufacturing design and production technologies. The ongoing DLA R&D AM efforts include strategy road-mapping, identification of amenable parts, and the development of the 3D technical data and the technical rights needed for the AM certification process that will make AM a viable source to address hard-to-source parts with high demand.

Prior to this position he was member of the Strategic Network Optimization (SNO) team designated by the Office of the Secretary of Defense, Supply Chain Initiatives as program manager for the SNO Business Plans. As a work stream lead in the SNO Integrated Process Team, he partnered with key stakeholders across Department of Defense (DOD) and other Federal Agencies to provide recommended solutions to achieve the next generation “end-to-end” global defense supply, distribution, disposition, and transportation network.

Dr. Mark Cotteleer is the deputy director of US eminence and research director at Deloitte. He works with clients and other thought leaders to deliver insight that drives business success.

Dr. Cotteleer’s research primarily focuses on the application of advanced technology in pursuit of operational and supply chain improvement. He is widely published in top management and academic journals and recognized with multiple research and teaching awards, including “Best Paper” from the Journal of Operations Management, the Dively Award for Outstanding Research from Harvard Business School, “Educator of the Year” from the Marquette Executive MBA program, and the John P. Raynor, S.J., Faculty Award for Teaching Excellence from Marquette University.

In addition, Mark has 25 years of consulting experience in the areas of technology enabled business transformation, supply chain strategy, analytics, and process design — in manufacturing, distribution, health care, and service settings. He lives in Wisconsin with his wife and three children.
John Forsythe is a Director in Deloitte Consulting Federal Organizational Transformation Service Line. He specializes in helping client leaders effect broad organizational change across organizational boundaries and chains of command. He has more than 24 years of business management experience, including 16 years in Federal Government Consulting.

During his career, he has led many consulting assignments, developing expertise in culture transformation, strategic change, organizational assessments, communications, leadership alignment, executive coaching, and organizational consolidation. John leads Deloitte’s CulturePath culture transformation solution. John also leads Deloitte’s Federal Strategic Change Community, is a co-lead of the US Strategic Change practice, and is on Deloitte’s Global Strategic Change Executive Team. He also has extensive expertise and experience in group facilitation, building team chemistry, strategy development, workforce planning, training, and organizational design and development. He has provided strategic advice and counsel to clients from across the Defense Sector, working with the Office of Secretary of Defense, USTRANSCOM, US Navy, US Marine Corps, and US Air Force, including the Logistics and Materiel functions of those Services.

He has also worked with clients across the Federal Government, including the Department of Commerce, US Patent & Trademark Office, US Department of Agriculture, and Veterans Affairs.

CAPT Futcher is currently the Navy staff’s lead for developing the Navy’s vision, implementation plan, and road map on additive manufacturing. His assignments as supply officer and officer-in-charge afloat include tours in USS SAVANNAH (AOR 4), USS CARTER HALL (LSD 50), USNS COMFORT (T-AH 20), and in USNS RICHARD E. BYRD (T-AKE 4). Ashore he served in positions as contracting officer, logistics planner, operations research analyst, manpower analyst, and supply plans and policy. Captain Futcher holds a Bachelor of Business Administration in Business Economics from the George Washington University, a Master’s Degree in Operations Research from the Naval Postgraduate School, and is a graduate of the University of Virginia’s Darden School of Business Executive Program and Business Resource Management Program.
Mr. Gorham joined the America Makes team in 2013 as the deputy director of Technology Development and in May 2014 was promoted to director of operations. He has more than a decade of solid defense research and advanced manufacturing experience. Prior to joining America Makes, he was the Senior Manager of the Manufacturing Exploration and Development group within the Advanced Manufacturing Systems and Prototyping directorate of Lockheed Martin (LM) Aeronautics — Advanced Development Programs. In this position, Mr. Gorham was responsible for leading the transition focused development and the application of affordable manufacturing technologies for LM Aeronautics and other LM Business Areas across the corporation. He holds a BS in Aerospace Engineering from Texas A&M University and a MS in Engineering Management from Southern Methodist University.

Leanne Gluck is a deputy director of Workforce and Education for America Makes. As the national accelerator for additive manufacturing (AM) and 3D printing, America Makes is the nation’s leading and collaborative partner in Advanced Manufacturing and 3D Printing technology research, discovery, creation, and innovation.

Prior to joining America Makes, Leanne was the director of Social Impact at 3D Systems. In her role, she managed corporate philanthropy and education and sustainability initiatives, helping 3D Systems deliver on their mission of “Making Good.” She joined 3D Systems after working at the Clinton Global Initiative, running the CGI America Manufacturing Convening, building cross-sector collaborations focused on developing a skilled workforce, supporting entrepreneurs and SME’s, and strengthening innovation ecosystems to advance additive manufacturing in the United States.

From inspiring students to fixing the world someday, to using 21st century tools to change the world now, she believes 3D printing enables everyone to turn ideas into opportunities for impact and action.
Jim Joyce is a specialist leader in Deloitte Consulting LLP’s strategy and operations practice where he leads the additive manufacturing practice. He has a track of achieving breakthrough supply chain performance in multiple industries and in deploying new manufacturing technologies. Jim has held CEO, COO, and SVP Supply Chain positions in the manufacturing and retail industries. He has a BA and MA in Jurisprudence from the University of Oxford and a MBA from Dartmouth College. He is a former Marine.

Jim Joyce
Advanced Manufacturing and Supply Chain Manufacturing Specialist
Deloitte

Greg Kilchenstein
Director of Enterprise Maintenance Technology
OSD Maintenance Policy and Programs

Greg is the director of Enterprise Maintenance Technology in the Office of the Deputy Assistant Secretary of Defense for Maintenance. In this capacity, Greg is responsible for developing the policy and implementing programs that promote technology enablers which 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 teenage daughters.
Wayne King currently serves as leader of the Accelerated Certification of Additively Manufactured Metals Project at Lawrence Livermore National Laboratory (LLNL). This project is focused on developing physics-based models relating microstructure, properties, and process to performance of materials and includes predictive models for the laser powder bed fusion process. The project also focuses on using integrated in-process sensing, monitoring, and control technologies to accelerate certification.

He has 25 years of experience at LLNL ranging from fundamental materials research and programmatic science to research management. Dr. King received his BA degree from Thiel College in Physics and Mathematics and his PhD from Northwestern University in Materials Science and Engineering. He has worked in the areas of radiation effects, high temperature oxidation, atomic structure of interfaces, grain boundary engineering, and additive manufacturing. He is author or co-author of over 100 peer-reviewed publications and is founder of the Frontiers of Electron Microscopy in Material Science series of international conferences.

Colonel Patrick T. Kumashiro is the Chief, Maintenance Division, Directorate of Logistics, Deputy Chief of Staff, Logistics, Engineering and Force Protection, Headquarters United States Air Force, the Pentagon, Washington DC. Colonel Kumashiro develops weapons system readiness requirements, provides aircraft maintenance policy guidance and aircraft disposition for over 5,400+ fighters, bombers, airlift/tankers, unmanned systems, and trainers. In this role, he advocates and defends aircraft maintenance manpower requirements to USAF Corporate Structure, OSD and Congress. Colonel Kumashiro serves on the AF Requirements Oversight Council (AFROC) to validate AF operational requirements documents for key acquisition programs. Additionally, he serves as a Sustainment Advisory Group member to the F-35 Joint Program Office to identify F-35 life cycle sustainment requirements and develop global sustainment solutions for US Services and International partner nations. As the aircraft maintenance career field manager, Colonel Kumashiro is responsible for deliberate force development to include education and training for 3,000 logistics officers and 65,000 enlisted Airmen.

Colonel Kumashiro entered the Air Force in 1989 earning his commission as a graduate of Officer Training School. He has, served in a variety of aircraft maintenance, munitions, and logistics assignments at the squadron, wing, major command, Air Staff, and joint level and has previously commanded at the group and squadron level. Additionally, Colonel Kumashiro has previously deployed as the Deputy Group Commander, 332 Expeditionary Maintenance Group at Joint Base Balad, Iraq. Prior to his current assignment, Colonel Kumashiro was the Commander, 309th Aerospace Maintenance & Regeneration Group at Davis-Monthan AFB, AZ.
Dr. Ade Makinde is a principal engineer for Manufacturing Process Modeling at GE Global Research Center. Dr. Makinde is a mechanical engineer with expertise in the area of nonlinear mechanics, manufacturing process modeling, and thermomechanical problems in general. He has been at GE GRC since 1997 where he leads or supports several programs focusing on the optimization of many manufacturing processes. He is currently leading the effort to develop physics-based tools for modeling the additive manufacturing process for all of GE. He graduated from the University of Lagos, Lagos, Nigeria, with a BSc in Mechanical Engineering, and holds a PhD in Mechanical Engineering from the School of Mechanical and Aeronautical Engineering, Poitiers, France. He has more than 30 peer-reviewed technical publications, 7 awarded and 6 filed patents. He is the recipient of several technical awards at GE.

Mark is an experienced Supply Chain professional and retired United States Marine Corps Colonel with more than 29 years’ experience leading teams solving supply chain, logistics, resource allocation, requirements determination, and acquisition governance challenges facing the Federal Government.

Mark possesses expertise in: joint capabilities integrated development system; DoD planning, programming, budget, and execution system; DoD’s acquisition governance; congressional liaison; logistics strategy and policy development; supply chain methods and tools; sourcing and procurement methods; and eProcurement implementation.

Mark LaViolette
Specialist Leader
Deloitte
In June 2015, Lieutenant Colonel Marotto graduated from the Dwight D. Eisenhower School for National Security and Resource Strategy. His award-winning group paper at the Eisenhower School on Additive Manufacturing and its potential transformation of the supply chain within DoD led to his current assignment as the Additive Manufacturing lead for the Marine Corps. Prior to attending Top Level School, Lieutenant Colonel Marotto commanded Marine Aviation Logistics Squadron 49 (MALS-49). His last deployment was as the Deputy, G-4 of II Marine Expeditionary Force (Forward) at Camp Leatherneck, Afghanistan, from June 2011 to January 2012.

Lieutenant Colonel Marotto graduated from Ohio Wesleyan University in 1994, Summa Cum Laude, with a Bachelor of Arts in Environmental Studies and Geography.

As an Aircraft Maintenance Officer, Lieutenant Colonel Marotto has held numerous leadership and staff positions within the Marine Aircraft Wing and Supporting Establishment and served in the Marines’ Quadrennial Defense Review Integration Group.

Lieutenant Colonel Marotto has also deployed to Iraq and directly supported units participating in the Kosovo Conflict while at COMFAIRMED in Naples, Italy.

Kelly Marchese
Supply Chain Strategy Leader
Deloitte

Kelly is a leader in the Supply Chain Strategy & Manufacturing Operations practice. She specializes in Global Supply Chain Transformations, Supply Chain Innovation, Lean Operations, and Supply Chain Risk/Resilience. Kelly has more than 20 years of experience driving operational transformation and enterprise process excellence. She is a strategist, as well as a skilled leader of complex/global engagements which cross organizational boundaries — driving enterprise-level improvements, facilitating buy-in across originations (including union environments) with an unrelenting focus on speed to value.

Kelly is primarily focused in industry sectors where manufacturing is a major driver of company operational performance. Over the last year, she has led the investments and development of Deloitte’s Additive Manufacturing practice which has become a market and thought leader.

Kelly is a certified Master Black Belt in Lean/Six Sigma and actively involved in developing thought leadership around Supply Chain Innovation and Talent, as well as Global Supply Chain Risk. She is a leader and advocate for women in consulting and specifically supply chain.

She is the Lead University Partner for Duke University and is on the Supply Chain board for Howard University. Kelly enjoys spending time with her husband of 22 years and her 11 year old daughter cooking, watching movies, and playing golf.
General Charles F. Wald (USAF, Ret.) serves as Vice Chairman and Senior Advisor for Deloitte’s Federal practice. He is responsible for providing senior leadership in strategy and relationships with the US Department of Defense. General Wald retired from the US Air Force as a four star general and is a subject matter specialist in weapons procurement and deployment, counterterrorism, and international energy security policy.

Mr. Scot Seitz is the Advanced Manufacturing Lead for the US Army’s Logistics Innovation Agency (LIA). The LIA’s mission is to assess and integrate innovative logistics solutions, policies, processes, and programs across the Army Logistics enterprise. Mr. Seitz is currently leading the Army’s implementation plan for advanced manufacturing, and seeks to evangelize and integrate Advanced Manufacturing efforts across the Army.

Mr. Seitz has more than 33 years of DoD logistics and transportation experience. He has served in numerous leadership roles as a Marine Corps officer and Deputy Director at the Defense Logistics Agency (DLA) where he led numerous strategic and Operational Logistics, Joint Transportation and Facilities Operations and Maintenance efforts for acquiring, storing and distributing equipment, and moving personnel. He has a BA in Political Science from the University of Utah, a Masters in Military Science from the Marine Corps University, and a Masters in Emergency Management from American Public University.
Matt Widmer is a Deloitte Advisory principal with Deloitte Financial Advisory Services LLP. Mr. Widmer has more than 20 years of experience helping clients address complex business challenges.

His experience includes intellectual property consulting, transaction advisory, asset valuation, financial investigations, financial modeling, litigation consulting, negotiation strategy and corporate finance.

Mr. Widmer is the leader of Deloitte’s Federal Advisory practice. In his role, Matt leads teams that provide strategic financial advisory consulting in the areas of Regulatory, Forensics and Compliance, Financial Transactions, and Risk and Resilience. The Advisory Federal practice serves US Government clients, such as the US Department of Justice, the US Department of Defense, HUD, the US Department of State, the Centers for Medicare and Medicaid, and dozens of other agencies. Mr. Widmer has personally served as the lead advisor for multibillion dollar federal and commercial transactions.

Mr. Widmer is a Project Management Professional (PMP), a member of the Project Management Institute, the Licensing Executives Society (LES) and the American Society of Appraisers (Business Valuation). Mr. Widmer serves as co-chairman for Deloitte’s annual United Way campaign drive for the Greater Washington Federal practice, and also serves on the board of directors of the Deloitte Foundation.

Thank you to our production team

Sean Alderman      Jim Joyce      Melissa Tabach
Jim Buscaglio      Mark LaViolette  Brian Tilton
Mark Cotteleer     Josephine Lee   Stuart Trouton
John Forsythe      Morgan Macdonald George Uehling
Geri Gibbons       Kelly Marchese   Mark Vitale
Allison Harris     Mike Passaretti  General Chuck Wald
Kevin Hom          Ryan Press       Matt Widmer
Brien Hughes       Brenna Sniderman  Ian Wing
The 3D Opportunity:
Additive Manufacturing for Business Leaders

Instructor: Mark Cotteleer
A free course from Deloitte University Press
February 6 – March 18
https://novoed.com/3d-opportunity-spring-2016

The Course
Aimed at a general business audience, this course provides an overview of a wide range of additive manufacturing technologies and offers a framework to help learners understand the business implications of these technologies. The course is relevant for professionals working in product design, manufacturing, supply chain, strategy, and other disciplines. Through the course, participants will build a knowledge base on additive manufacturing to help them engage in discussions with colleagues, customers, and suppliers about how the technology applies to their business.

Participants will explore many topics in this course including:

• What is additive manufacturing? Learn the processes and technologies that fall under the AM umbrella and gain an understanding of where they fit within the universe of manufacturing technologies.

• How will AM impact my business? Explore a framework based on economic principles that helps explain how AM will influence product and supply chain evolution.

• What is happening in key sectors impacted by AM? Understand the current and potential uses of AM in sectors including medical technology, automotive, and aerospace & defense, and learn how you can analyze your own industry and company to define a path forward with AM.

• What factors influence the business case for AM? Explore the key dynamics and general factors you should consider when building a business case for AM.

The course consists of approximately 2.5 hours of video content divided into approximately six-minute mini lectures. Quizzes allow you to check and consolidate your knowledge. And assignments reviewed by peers can take you deeper and give you practical information to take back to your job.

Sign up:
3D opportunity for quality assurance and parts qualification
3D opportunity for life cycle assessments
3D opportunity in the Department of Defense: Additive manufacturing fires up
3D opportunity for the supply chain: Additive manufacturing delivers
3D opportunity for intellectual property risk
The 3D opportunity primer

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Explore more from our 3D Opportunity series at dupress.com/collection/3d-opportunity/