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Kevin T. Slattery, DSc

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About the Editor

Kevin T. Slattery, DSc—Kevin is a Principal ADDvisor® at The Barnes Global Advisors. His primary expertise is in metallic additive and metals manufacturing, focusing on test program development, process and product verification, qualification, and certification. He has supported over 25 clients on six continents throughout the entire additive manufacturing value chain—from raw material to finished components. He is a 2020 Ambassador for America Makes and was part of the Materials Challenge Silver Medal team in the US Air Force Rapid Sustainment Office Advanced Manufacturing Olympics.

Kevin was previously Chief Scientist for Additive Manufacturing at Boeing Research and Technology (BR&T). He was responsible for developing and integrating the technology roadmaps and development plans for metallics additive manufacturing for the entire company, along with building and leading a multiskilled team to execute and deliver the technology throughout the enterprise. Prior to that, he was Chief Scientist for Metals, Ceramics, and Mechanical Systems at BR&T, with the responsibility for portfolio development and coordination, while executing the additive manufacturing portion.

He served as Division Chief Engineer for the US Navy and US Air Force fighter aircraft and US Army rotorcraft in Boeing's military sustainment organization. From 1997 to 2012, he was on the BR&T Metals Team as a researcher and senior manager, where he primarily developed advanced low-cost titanium-processing technologies supporting all Boeing products. He was the technical and programmatic lead in implementing the first aerospace metal-additive-manufactured structural aircraft components for both spares and production, with five other first-in-the-industry technology implementations.

He began his career at McDonnell Douglas (now Boeing) as a nondestructive testing engineer, where he developed inspection technologies for metallic and composite components, along with integrating the impact of discontinuities with the acceptance criteria for carbon/epoxy composites.

Dr. Slattery holds a BS and MS in Metallurgical Engineering from the University of Missouri-Rolla (now Missouri S&T) and a DSc in Material Science and Engineering from Washington University in St. Louis. He currently holds 37 US patents, with another 14 applications pending, along with 36 significant publications and conference presentations.

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Unsettled Aspects of the Digital Thread in Additive Manufacturing

Abstract

In the past years, additive manufacturing (AM), also known as "3D printing," has transitioned from rapid prototyping to making parts with potentially long service lives. Now AM provides the ability to have an almost fully digital chain from part design through manufacture and service. Web searches will reveal many statements that AM can help an organization in its pursuit of a "digital thread." Equally, it is often stated that a digital thread may bring great benefits in improving designs, processes, materials, operations, and the ability to predict failure in a way that maximizes safety and minimizes cost and downtime. Now that the capability is emerging, a whole series of new questions begin to surface as well:

- What data should be stored, how will it be stored, and how much space will it require?
- What is the cost-to-benefit ratio of having a digital thread?
- Who owns the data and who can access and analyze it?
- How long will the data be stored and who will store it?
- How will the data remain readable and usable over the lifetime of a product?
- How much manipulation of disparate data is necessary for analysis without losing information?
- How will the data be secured, and its provenance validated?

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