



**Joe L. Bricio, Ph.D.**

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Dr. Bricio is a Research Faculty at George Mason University's College of Computing and Science serving in the role of Chief Scientist at Rapid Prototyping Research Center, and Affiliated Faculty with the C5I Center. In this current role he is responsible for planning, execution and delivery of applied research in the areas of advanced communication and computing, as well as system engineering tools and techniques applied to integration and evaluation of complex system of systems for rapid fielding of National Security capabilities.

Dr. Bricio is a former DARPA PM responsible for development of integrating complex adaptive systems analysis methods using various forms of Artificial Intelligence techniques under a situated cognition framework, agent based and constructive simulation architectures, and knowledge representation into an accredited multi-level security cloud combat simulation enabling evaluation of various concepts associated with orchestration of theater assets including dynamic battle management, command and control architectures under the Assault Breaker II program. This effort resulted in numerous publications advancing complex adaptive systems analysis for warfighting concept exploration under uncertainty, including novel techniques for integration of dynamic Battle Management Command and Control tasking and re-tasking of simulated assets faster than real-time in a combat simulation cloud architecture. Effort allowed for a team of military subject matter experts, analysts, and modelers to conduct fully informed theater-wide all-domain kill web analyses in a matter of weeks using authoritative representations for U.S. and adversary forces. In this role, Joe had direct cost, schedule, and performance

oversight and accountability for a portfolio of programs involving over 25 industry performers, and several government labs.

Prior to his leadership role in Assault Breaker II Joe has led the development of many advanced information systems implementing situated cognition architectures, argumentation theory, knowledge representation, and semantic reasoning applied to U.S. Navy Strike Force Interoperability assessments prior to fleet deployment, real-time spectrum maneuver operations, training, and international cooperation opportunity identification with U.S. Department of the Navy program offices.

Over his career in the federal government Joe had many leadership roles including award winning NSWC Dahlgren Innovation Team Leader, U.S. Navy International Programs Office Manager for International Cooperative Opportunity Architecture, OUSD A&S Mission Engineering Advanced Capabilities Manager, MARCOSYSCOM Warfare Center Modeling and Simulation Lead, NAVSEA Modeling and Simulation Chair, and Maritime Theater Missile Defense Forum (MTMD) Modeling and Simulation Working Group Co-Chair.

From 2012 until 2014 Joe was Exchange U.S. Navy Scientist assigned to Australia's Defence Science and Technology Group where he assisted Joint Amphibious Capability integration with new Australian ship class and developed a Model Based Systems Engineering framework contributing to planning for a new Royal Australian Navy Technical Bureau for Combat Systems. Joe led numerous international science and technology initiatives with Australia and European Allied Nations in the areas of Mission Engineering, modeling and simulation, advanced information systems, coalition interoperability, and co-development of advanced technologies for asymmetric advantages.

Early in his career, Joe worked as a Modeling and Simulation Engineer at the Old Dominion Center for Advanced Engineering Environments at NASA Langley, where he applied his expertise in 3D modeling, game system design, and synthetic environment generation applied to advanced aerospace systems design and NASA virtual facilities computer-based learning model development. Joe has also applied his expertise to generate high resolution synthetic environments for terrain analysis, mission rehearsal and risk management applications using LIDAR/LADAR, hyperspectral and other advanced sensor fusion/signal processing techniques. Joe also has experience in industry working in technical leadership and business development roles in both small and large corporations.

## **Selected Publications**

**Contributor to book titled "Engineering Principles of Combat Modeling and Simulation" - Chapter 22 titled "GIS for Combat Modeling and Simulation" | Wiley & Sons**

**Applying Complex Adaptive Systems Research Results to Combat Simulations of the Generation after Next | Journal of Defense Modeling and Simulation**

Matthew T. K. Koehler<sup>1</sup>, Jose L. Bricio-Neto, Ernest H. Page, and Andreas Tolk

**SAFE-SiM Behavior Development Process Overview | Presentation to Military Operations Research Society Symposium, 12-15 June 2023**

Christopher Santos, Donna McDaniel, Daniel White, Mark Sumile, Jeffrey Saling, Dr. Jose Bricio-Neto,

**Analysis & Evaluation of Kill Webs via Graph Theoretic Methods | Presentation to Military Operations Research Society Symposium, 12-15 June 2023**

Mohammed A. Bhuiyan, Michael Hieb, Cameron Schlonski, Ali Raz, Christopher Santos

**Developing a Domain Specific Language for Complex Military Operational Analysis using Simulation | Presentation to Military Operations Research Society Symposium, 12-15 June 2023**

Mark Sumile, Cameron Schlonski, Daniel Maxwell, Michael Hieb, Ali Raz, Christopher Santos, Jose Bricio-Neto, Saikou Diallo,

**Conceptual, Mathematical, and Analytical Foundations for Mission Engineering and System of Systems Analysis | IEEE**

Ali K. Raz, Mohammed Bhuyian, Jose Bricio-Neto; Christopher Santos, Daniel Maxwell

**Applying New Metrics to Detect and Enumerate Kill Paths | MORS**

Emmet R Beeker III, Matt Koehler, Jose Bricio-Neto, Andreas Tolk, Ernie Page, Dough Flohr