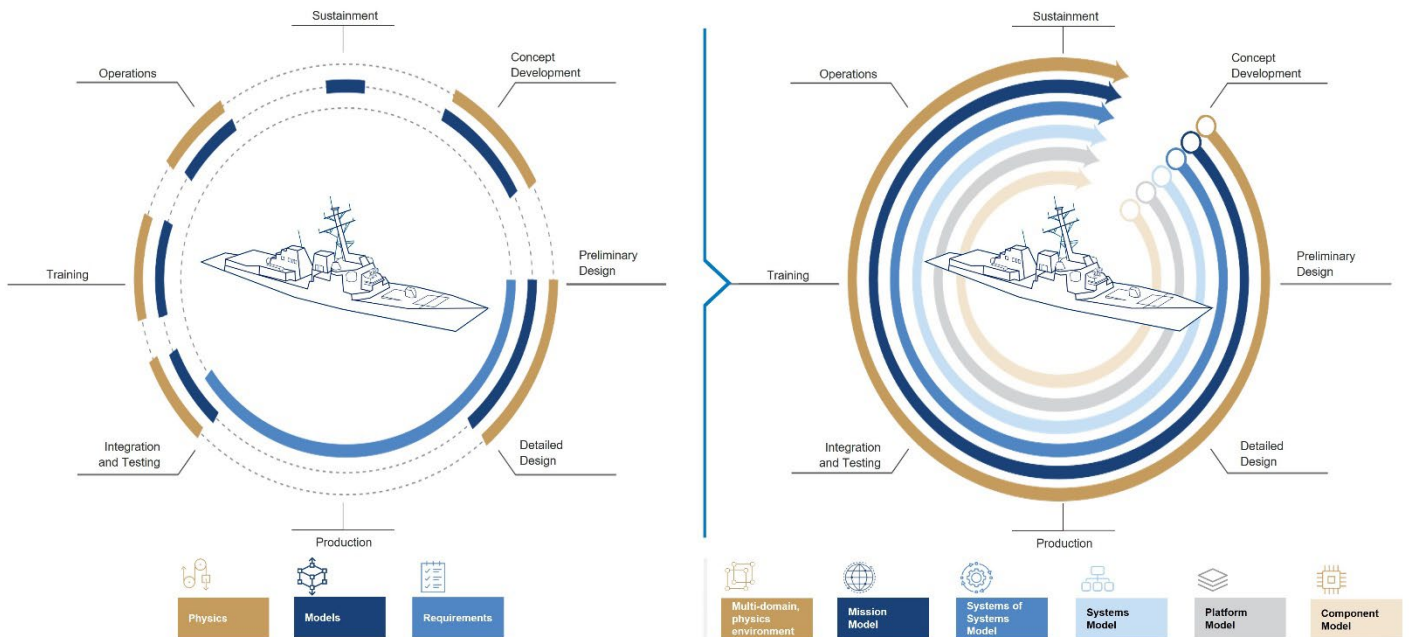


# DIMENSION™

DIGITAL MISSION ENGINEERING & SYSTEMS INTEGRATION

*Digital Precision. Technological Superiority.*

Defense leaders are laser-focused on readiness, lethality, and warfighting superiority. Achieving these goals demands precisely matching threats to capabilities, reviving the defense industrial base, and reforming acquisition processes.



**Our Approach:** DIMENSION™ engineers combine digital engineering tradecraft, a structured Systems Model (SysML)-driven approach, data science, and artificial intelligence (AI) / machine learning (ML) capabilities to derive operational insights, validate mission solutions, and empower leaders to decisively respond to complex operational challenges.

**Expertise:** DIMENSION™ engineers bring extensive hands-on experience modernizing the most complex defense systems, with deep knowledge of advanced Model-Based Systems Engineering (MBSE) methodologies. These engineers provide insightful analytics and real-time decision support, simplifying the management of fielded system architectures and eliminating vendor lock through open application programming interfaces (APIs). Open APIs enable rapid insertion of emerging technologies with plug-and-play flexibility, effectively delivering digital precision, informed decision-making, and sustained technological superiority. Our team holds clearances up to Top Secret and possesses significant practical

experience integrating complex data sources, utilizing advanced analytic tools, and executing sophisticated modeling and simulations.

**The Opportunity:**

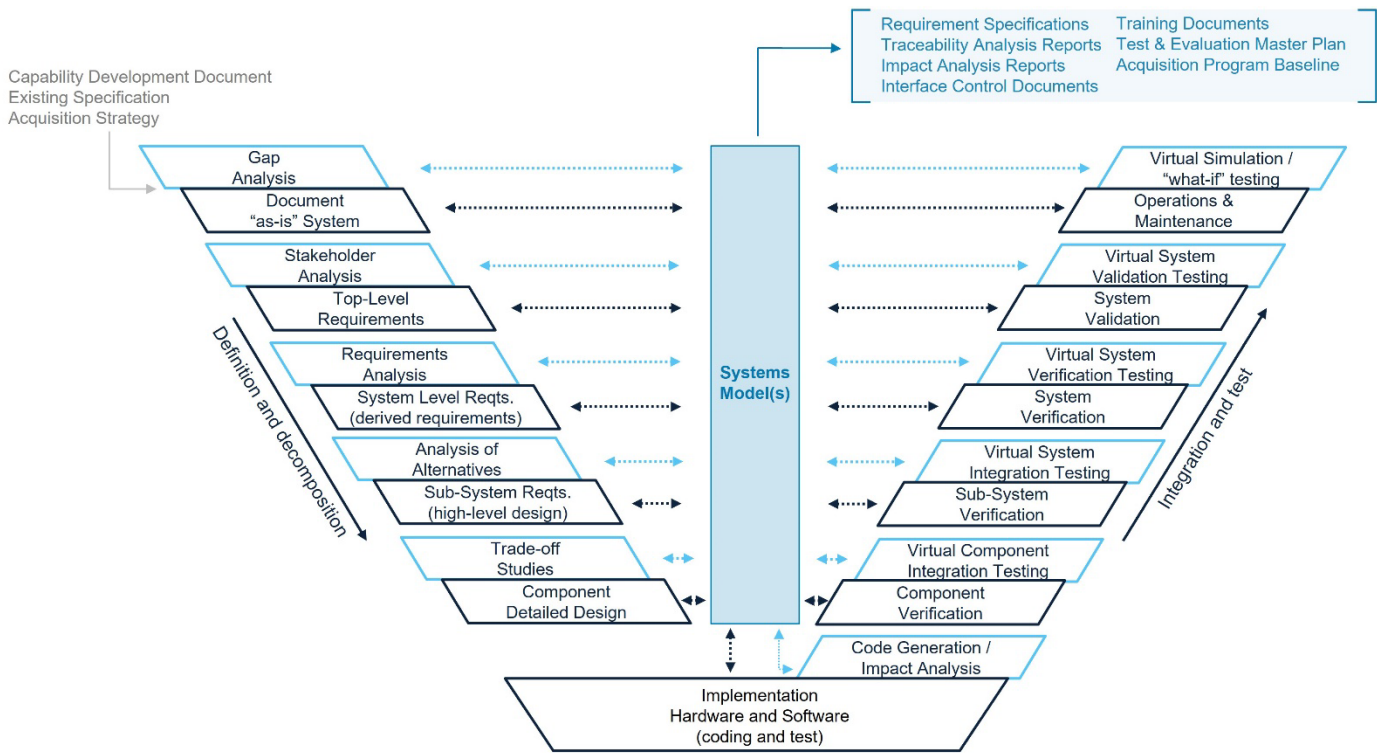
**Accelerating Modernization Priorities**  
 Since the first commissioning in class in 1991, and now with more than 70 hulls in service and counting, Arleigh Burke-class Guided Missile Destroyers form the backbone of the surface fleet. To maintain operational dominance, the Navy is continuously modernizing these platforms to stay ahead of evolving threats and maximize each ship's expected service life. However, traditional engineering approaches and independent analyses

of the existing ship service electrical systems and independent main propulsion systems limit the Navy's ability to comprehensively evaluate the impact of planned capability upgrades. These limitations hinder the Navy's ability to effectively integrate new warfighting capabilities in a rapidly changing operational environment.

**The Solution:**

**A Dynamic Systems Model**

Our engineers developed a comprehensive Dynamic Systems Model (DSM) tailored to evaluate the impact of emerging technologies and increasingly complex operational scenarios on the performance of installed power and energy systems.



**Systems Models:** DIMENSION™ engineers develop a comprehensive Dynamic Systems Model (DSM) to capture key activities throughout the entire system development lifecycle, from initial requirements gathering and analysis to design, implementation, verification, and validation to ensure defense leaders have a comprehensive understanding and immediate access to a consistent representation of the system, rather than heavy reliance on traditional document-centric methods.

Leveraging advanced Model-Based Systems Engineering (MBSE) methodologies using Cameo Systems Modeler, our team integrated diverse operational data—including electrical load analyses, detailed technical schematics, and real-world operational performance data—into a centralized authoritative digital model. Close collaboration with Navy Subject Matter Experts ensured the accuracy of system representations, while advanced analytics capabilities enabled predictive modeling and proactive optimization of complex power and energy interdependencies.

**The Impact: Digital Precision In Action**

The implementation of the Dynamic Systems Model (DSM) directly positions Navy leadership to proactively mitigate technical risks, streamline lifecycle management, and incorporate new warfighting capabilities more effectively.

By employing the DSM’s detailed scenario analyses, Navy technical leadership can quickly assess the impact of system upgrades and establish bi-directional traceability of specified and derived requirements, significantly reducing integration risk and accelerating decision timelines. Practical outcomes already demonstrated include optimized electrical load management, resulting in increased operational availability and improved readiness. The predictive analytics capabilities embedded in the DSM can also enhance the precision of maintenance scheduling, decreasing lifecycle costs. By establishing a scalable, authoritative data-driven framework, the DSM enables ongoing rapid integration of emerging technologies, ensuring the Navy continues to improve lethality, warfighting, and readiness.

**ABOUT HERREN**

Herren Associates, Inc. is an engineering and technology firm headquartered in Washington, D.C., dedicated to delivering mission-critical impact to national security leaders. Founded in 1989, Herren has built a 35-year legacy of maximizing the value of every taxpayer dollar through analytical rigor, digital engineering expertise, advanced analytics, and full-spectrum cybersecurity. Our team works side-by-side with clients, transforming complex challenges into decisive operational outcomes that ensure readiness, strengthen strategic advantage, and enhance national security.

*For more information, please visit:*

*HerrenAssociates.com*

“ The twenty-first century presents new challenges for deterrence and assurance strategy. The rise of cyber warfare, the proliferation of ballistic missiles, advances in unmanned capabilities, and the emergence of non-state actors all complicate traditional methods. The rise of artificial intelligence, advances in compute, the rising integration of world economies – all of this presents grave challenges in the twenty-first century. - Adm. Samuel J. Paparo USINOPACOM