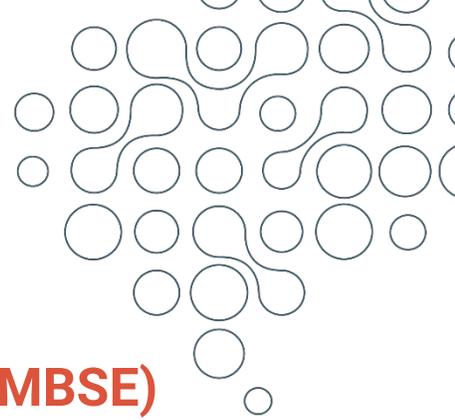




G2OPS[®]
Smarter Intelligence.[®]



Model-Based Systems Engineering (MBSE)

Model-Based Systems Engineering (MBSE) has redefined systems engineering. Design, development, implementation, and revision of any system now benefits from the creation of a conceptual model that mimics real-world, physical systems. Creating a design via MBSE provides engineers, technicians, and decision makers the ability to scrutinize functionality, conceptualize revisions, and test advancements virtually, while recognizing the cascading changes within the systems, all before making physical changes.

MBSE further advances systems engineering by providing comprehensive requirements coverage while identifying risk and impact assessment challenges through improved engineering analysis and auto-generation of system documentation. The results enable greater visibility of distributed technology infrastructure and predictions of risk, performance, and cost.

Digital Twin Technology

A Digital Twin represents a virtual (computer-based) version of a system existing in the real world. Creation and curation of Digital Twins accelerates and innovates the understanding, evaluation, and advancement of design improvements. G2 Ops Digital Twin Technology utilizes MBSE foundations, as well as in-house proprietary modeling standards to develop a system's construct that allows for ease of validation, prioritizing vulnerability resolution, streamlining engineering processes, testing and evaluation, troubleshooting, and innovative advancement of design.

MBSE Advanced Analytics

The combination of MBSE and Digital Twin Technologies forms the foundation from which G2 Ops performs advanced, meticulous systems Analytics to provide in-depth, actionable metrics about a system providing decision makers with quantitative analyses to drive innovative and responsive changes for improvement. Key analytic functions include:

Performance Modeling and Simulation - Provides system mapped Key Performance Parameters (KPP) and interface requirements while utilizing simulation tools to predict and optimize performance and requirements.

Baseline/Change Management - Models Life Cycle Inventories (LCI) of infrastructure to automate Engineering Change Request (ECR) processes to reduce administrative labor, accurately predict cost, schedule, and performance of changes from design baseline.

Secure Distributed Access - Ensures secure access to the MBSE model throughout an enterprise, including model checkout/checkin, advanced analytics hosting and data security.

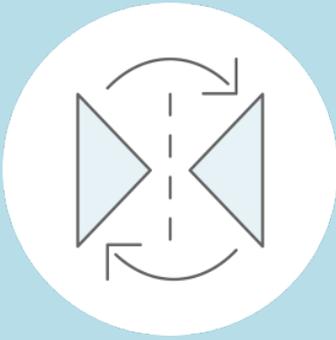
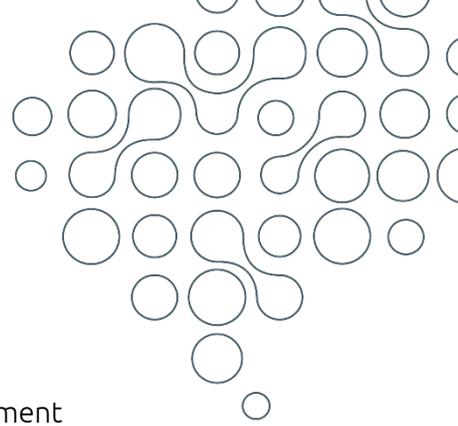
Automated Sustainment Support - A full set of digital twin documentation is created for maintenance, training, provisioning and logistics.

Thread Optimization - Models tactical thread reliability, analyzing for single point of failure and assessing thread-level mission performance in response to primary, secondary and tertiary system failures.

Acquisition Requirements Development - Generates contractor specifications which, when coupled with operational and architecture information, improve understanding of requirements to improve cost and schedule performance.

Test Automation - Allows for parameter variances for more complete test coverage, auto generates test matrices based on interface risk, models KPP requirements, and auto generates technical data packages.

Interface-Based Integration Risk Management - Automates interface management through architecture-managed interface requirements.



The creation and use of the digital twin typically include the following steps.

1. Auto Generation.

Creation of the customer’s model with the aid of G2 Ops-designed auto-generation applications.

2. Defining Automation and Analytics.

Define the types of SE automation and analytics a customer’s project needs outline the processes the SE team will take to utilize these new methods.

3. Secure Cloud Environment.

Set up a secure cloud environment for your SE team/stakeholders to ensure data integrity and safety, as well as enabling the collaborative power of MBSE.

4. Model change impacts

Deploying the model for the engineering development effort to include version control, security, and deploying and tailoring the SE automation and advanced analytics for optimal performance.

Typical Deliverables include:

- Performance Modeling and Simulation
- Baseline/Change Management
- Interface-Based Integration Risk Management
- Thread Optimization
- Acquisition Requirements Development
- Test Automation

Unified Cyber Risk Management

G2 Ops uses MBSE to enhance system integrity and cybersecurity by overlaying vulnerabilities against mission and operational context. This guides prioritizations for mitigations based on operational impact and criticality to mission, including the ability to:

1. Score mission-based risk impact to proactively prioritize risk mitigations prior to any mission impact. For example, our models recognized WannaCry’s impact in March 2017 when the vulnerability was first published with high-risk ratings, well before the exploit was generally deployed in May 2017.

2. Generate attack graphs and calculate exploit likelihood. Calculate risk based on architectural context, or threat surface, providing a sophisticated vulnerability analysis capability that predicts the likelihood cyber vulnerabilities will reduce mission effectiveness.

3. Increase impact visibility for critical components, attributing risks and vulnerabilities to multiple critical mission threads or dataflows. This capability equips leaders with mission-based prioritization for modernization planning linked to operational value.

4. Identify obsolescence exposure and supply chain risk. Systematically evaluate vendor and supplier risks in terms of individual or overall mission to enable remediation prioritization based on mission support requirements.

5. Integrate discovery scan outputs and other risk assessment data with mission threads. Take ACAS and other Risk Management Framework related vulnerability and risk assessment output and overlay mission priorities to improve comprehension and awareness of impact and modernization priorities.

