Operational Requirements Expected System Performance

Powertrain

MATLAB® SIMULINK® pleçis®

Chassis

GeﬂoS® SOLIDWORKS® Ansys®

Protection & Survivability

SurVAST®

System Centric Digital Twin — ENTERPRISE® ARCHITECT

Firepower

Maple® RECURDYN®

Human Factors

RAMSIS®

Definition Optimisation ↓   ↑ Validation

Running Gear

MATLAB® SIMULINK® RECURDYN®

Demonstrator / Prototype / System   All software products are registered.

Conceived as **Systems of Systems (SoS)**, the growing complexity of land platforms is challenging during the whole realisation process and the following lifecyle:

- Requirements, capabilities and specifications
- Functional and behavioural coverage
- Architecture and structure
- Management of risks, costs and obsolescence
- Initial operation, test and qualification

IABG's services support you in all aspects throughout the entire conception, realisation and lifecycle of any system. Our analytical capabilities in operational, technical, and economical disciplines together with powerful methods of MBSE and Digital Twins provide the required answers to both system performance and component centric questions.

For more information please contact:

IABG • Defence & Security

Phone   +49 89 6088-2637

defence@iabg.de

AUTOMOTIVE

INFOCOM

MOBILITY, ENERGY & ENVIRONMENT

AERONAUTICS

SPACE

DEFENCE & SECURITY

2022-05_03 • © IABG

Further information for MBSE

IABG. The Future.

Defence & Security

Model Based System Engineering (MBSE) and Digital Twins for Military Applications

iABG

About us

IABG is a private, **manufacturer-independent and product-neutral consultancy** with about 1,000 employees. The division Defence & Security supports the German Armed Forces, NATO and the European Union as well as selected public and private clients with individually tailored services covering

- Concepts and implementations
- Cross-domain models and simulations
- Surveys, deductions and recommendations
- Programme management / Project support.

Our Expertise in MBSE and Digital Twins

IABG is part of a large number of past and current projects:

- **Main ground combat system**
  Requirements Management, technical advice,concept generation, capability assessment
- **Successor for air liftable weapon carrier Wiesel 1**
  Requirements Management, functional demonstrator, support for proposed solutions, specification management
- **Air liftable platforms (wheel)**
  Requirements Management, technical advice,capability assessment, interviews and workshops, market enquiry
- **Infantry fighting vehicle**
  In-service analysis, data collection, human factors, configuration management, change management
- **Reconnaissance vehicle (next generation)**
  Requirements and Capability Management, technical advice, concept evaluation
- **Floating bridge**
  Requirements and Capability Management, technical advice, concept evaluation

Overcoming Complexity with MBSE

In the context of modern land platforms IABG generates high added value to both procurement agencies and industry.

Operational topics

- Operational effectiveness
- Threat catalogue and survivability
- Scenarios & mission vignettes
- Operational requirements management
- Modelling of doctrine and tactics
- Mission planning and role assignment
- Data farming and statistical evaluation
- Human factors engineering
- Training

Technical / Physical topics

- Requirements engineering
- Conceptual system design
- Flight and mission performance
- Threat analysis and observability
- Communication and network (all OSI Layers)
- Sensor performance (EO / IR, Radar, SIGINT etc.)
- Automatic target recognition
- Data exchange and fusion
- Effector performance (ASM, ECM etc.)
- Modelling of physics and new technologies
- Modelling of system logic and processes
- Automation, decision making and machine learning

Economic and administrative topics

- LCC and affordability
- In-service support and supportability
- Certification & qualification
- Procurement process and time constraints

Modelling and Simulation

IABG continuously enhances its excellence in operational and technical analysis. IABG's experience of more than 50 years in defence & security enters land platforms using MBSE along with setting up Digital Twins to overcome the complexity of any System of Systems.

This tool chain is conceived to

- Support cross-platform trade-off studies
- Identify vulnerable interfaces and critical dependencies between different assets
- Ensure the consistency of requirements throughout all levels of detail, i.e. System of Systems, involved assets and carried payloads

System of Systems analyses

Trade-off studies