7 Core Functions of Systems Analyses & Engineering



- Concise Problem Definition
- Clear Understanding of Customer Needs
- Concise System / Project Boundaries
- Strategic Planning & Baselines
- "Concept" of Operations
- Stakeholder Buy-in
- Acquisition Strategy
- White Papers
- Verification of System Performance and Functionality
- Validation of System Specification and Design Parameters
- Test Planning and Implementation

- Technical, Functional, and Operational Analysis
- Requirements Elicitation, Clarification, Derivation, and Tracking
- · Change Control and Impact Analysis
- Requirements Verification and Validation



- · Risk Identification and Tracking
- Justification for Funding Contingency
- · Risk Handling Strategy
- Risk Reduction Plan
- · Risk-informed Path Forward

- Trade Studies
- Decision Metrics
- Organization & Analysis of Complex Data
- Analysis of Alternatives
- · Risk-Informed Decision Making
- Integration of Viable Solutions

- Program & Project Integration
- Laboratory-wide R&D Integration
- Laboratories / Industries / Universities Integration
- Integration of System Elements
- Systems of Systems Analyses

- Technology Maturity Analysis
- Technology Development Roadmap/Path Forward
- Roadblock Identification & Mitigation
- System Assessments (e.g., energy systems)