**Test and Evaluation Concept Template**

**1. Introduction**

* **Purpose**: Briefly state the purpose of this document—to define the strategy and approach for all T&E activities for the system.
* **Scope**: Define the boundaries of the T&E effort, including which system elements and lifecycle phases are covered.
* **Goals**: Outline the overarching goals of T&E, such as reducing risk, confirming compliance with requirements, informing decision-making, and assessing system maturity.

**2. Test Strategy**

* **Levels of Testing**: Specify the hierarchical levels at which testing will occur:
  + Component-level (e.g., isolated function checks).
  + Subsystem-level.
  + System-level (e.g., interoperability and interface validation).
  + System-of-Systems (SoS) integration (if applicable).
* **Methods and Techniques**: Describe the primary methods for verification and validation:
  + **Test**: Direct measurement under controlled or simulated conditions.
  + **Analysis**: Use of mathematical modeling, simulation, logical reasoning, or similarity evidence.
  + **Demonstration**: Qualitative exhibition of performance by observing system response.
  + **Inspection**: Visual or dimensional examination.
  + Specify scientific techniques like Statistical Test and Analysis Techniques (STAT) for efficient test design.
* **Phased Testing Approach**: Outline how testing will progress through the lifecycle:
  + **Developmental Test and Evaluation (DT&E)**: Conducted by the developing agency or contractor to reduce risk and verify design.
  + **Operational Test and Evaluation (OT&E)**: Conducted by typical users under realistic operational conditions to assess military utility, operational effectiveness, and suitability.
  + **Site Acceptance Test (SAT)**: Performed at the customer's location to validate operability and check interfaces.
  + **Follow-on Testing**: For upgrades, modifications, or increments.

**3. Evaluation Framework**

* **Metrics**: Define Key Performance Parameters (KPPs), Measures of Effectiveness (MOEs), and Measures of Performance (MOPs) to quantify success and guide T&E.
* **Data Synthesis**: Explain how test data will be combined with modeling, simulation, and real-world exercises for comprehensive assessment.
* **Acceptance Criteria**: Specify the criteria that must be met for the system to be considered ready for use or to progress to the next phase.

**4. Risk-Driven Approach**

* **Linkage to Risks**: Directly link test objectives to identified critical risks, such as cybersecurity vulnerabilities or integration failures.
* **Test Prioritization**: Describe how tests will be prioritized based on their impact, cost, and schedule constraints.
* **Deficiency Management**: Outline processes for tracking and resolving identified deficiencies or unmet requirements.

**5. Stakeholder Alignment**

* **Roles and Responsibilities**: Define the roles of various stakeholders (e.g., developers, operators, sponsors, independent evaluators) in test planning, execution, and reviews.
* **Communication Plan**: Describe how T&E results will be communicated to stakeholders to support milestone decisions.

**6. T&E Processes and Activities**

* **Planning**:
  + **Critical Issues Identification**: Pinpoint high-risk areas requiring validation, especially new technologies or complex integrations.
  + **Test Design**: Use pre-test analysis to predict outcomes and define data requirements.
  + **Test Requirements Review (TReqR)**: Conduct this review before procedure development.
* **Execution**:
  + **Test Readiness Review (TRR)**: Conduct formal TRRs to ensure readiness of the test article, facility, personnel, and procedures.
  + **Data Collection**: Specify methods for collecting data using instrumentation, logs, and simulations.
* **Analysis and Reporting**:
  + **Post-Test Synthesis**: Compare predicted versus actual performance.
  + **Evaluation Reports**: Summarize capabilities, limitations, and risks identified.
* **Decision Support**:
  + Explain how T&E results will be balanced with cost, schedule, and mission needs to guide program choices.

**7. Integration with Systems Engineering Lifecycle**

* **Early and Continuous Application**: Emphasize that T&E begins early in the concept stage and continues throughout the lifecycle.
* **Requirements Traceability**: Detail how test procedures and results will be traceable to system requirements, functions, and failure modes.
* **Model-Based T&E**: Describe how system architecture models (e.g., SysML) will be leveraged to generate test cases and predict failures, supporting early verification and validation.
* **Feedback Loops**: Explain how T&E insights will inform design refinements, risk management updates, and support continuous improvement.

**8. Special Considerations**

* **Non-Developmental Items (NDI)**: Address how COTS/GOTS systems will be verified for advertised capability and integration.
* **Cybersecurity Test & Evaluation**: Include plans for evaluating survivability against cyber threats in operational environments.
* **Human Systems Integration (HSI)**: Explain how intended users will be involved in T&E activities, especially validation, to ensure the system meets their needs.
* **Workforce Competency**: Outline strategies for ensuring T&E personnel have the necessary skills and training.
* **Realistic Testing**: Emphasize that tests must be realistic and reflect actual operational conditions.
* **Verification vs. Validation Clarity**: Ensure clear distinction between "building the product right" (verification) and "building the right thing" (validation).

**9. Key Outputs and Deliverables**

* **Test Plans**: Detailed documents outlining procedures, resources, and schedules for specific tests.
* **Test Cases and Procedures**: Specific steps to be executed during testing.
* **Test Reports / Evaluation Reports**: Summaries of test results, system capabilities, limitations, and risks.
* **Risk Register Updates**: Documentation of how T&E activities have validated or informed mitigation strategies for identified risks.
* **System Verification Review (SVR) / Functional Configuration Audit (FCA) documentation**: Reports assessing conformity to baselines.