Technology Readiness Levels

ACQ

- System Test, Flight and Operations
- System/Subsystem Development

S & T

- Technology Demonstration
- Technology Development
- Research to Prove Feasibility
- Basic Technology Research

9 Actual System "Flight Proven" Through Successful Mission Operations

8 Actual System Completed and "Flight Qualified" Through Test and Demonstration

7 System Prototype Demonstration in an Operational Environment

6 System/Subsystem Model or Prototype Demonstration in a Relevant Environment

5 Component and/or Breadboard Validation in Relevant Environment

4 Component and/or Breadboard Validation in Laboratory Environment

3 Analytical and Experimental Critical Function and/or Characteristic Proof-of-Concept

2 Technology Concept and/or Application Formulated

1 Basic Principles Observed and Reported

TRL Definitions

Technology Readiness Level	Hardware	Demonstration Environment	Risk for PDRR	Risk for EMD
1- Basic principles observed and reported	Paper studies	Not applicable	Unacceptable	Unacceptable
2 – Technology concept and/or application formulated	Paper studies	Not applicable	Unacceptable	Unacceptable
3 – Analytical and experimental critical function and/or characteristic proof of concept	Paper studies/individual components of breadboard	Laboratory	Unacceptable	Unacceptable
4 – Component and/or breadboard validation in laboratory environment	Low fidelity, integrated breadboard	Laboratory	Unacceptable	Unacceptable
5 – Component and/or breadboard validation in relevant environment	High fidelity Breadboard	High fidelity lab or flying test bed	High risk	Unacceptable
CDR **6 – System/subsystem model or prototype demonstration in a relevant environment**	Engineering prototype	High fidelity lab or low fidelity flying test bed	Acceptable risk	High risk
7 – System prototype demonstration in an operational environment	Engineering prototype	High fidelity flying test bed	Low risk	Acceptable risk
8 – Actual system completed and "flight qualified" through test and demonstration	Operational prototype	Integrated and flight tested in target aircraft under operating condition (i.e. DT&E)	Qualified product	Low risk – Qualified product