Maturity Sub-Factor
Element 1: Engineering Design Maturity

Level 1: Requirements Analysis

- Requirements Decomposition completed
- Functional Baseline completed
- Derived Requirement development completed
- Interface identification completed
- Quality plan completed

Level 2: Preliminary Design Analysis

- Allocated Baseline completed
- Component Analysis / Selection completed
- CAD Drawings completed
- Weight / Cost BOM completed
- Interface Designs completed
- Lessons Learned from previous design generation implemented
- Design For Manufacturability study completed
- Special Characteristics plan and list completed

Level 3: Subsystem Integration, Testing, and Analysis

- Subsystem Integration, Testing, and Analysis completed on the following subsystems:
    - Hull / Structure / Frame
    - Suspension
    - Braking
    - B-Kit Protection
    - Power Generation and Distribution
    - Engine / Transmission / Transfer Case
    - Electronics Architecture / Software
- Requirements Compliance Matrix completed
- Supplier quality assurance plan completed
- Manufacturing plan completed
- Failure Analysis completed

Level 4: Detailed Design Analysis

- Subsystem Designs updated
- CAD Drawings updated
- Weight / Cost BOM updated
- Interface Designs updated
- Lessons Learned from previous design generation implemented
- Joint summary completed

Maturity Sub-Factor
Element 1: Engineering Design Maturity

Level 5: System Integration, Testing and Analysis

- System Demonstrator fabricated
- System Testing completed (to current requirements)
    - Automotive Performance Testing
    - C4I Performance Testing
    - RAM Testing over JLTV Operational Terrain (Attachment 1, Annex H)
- Requirements Compliance Matrix updated
- Failure Analysis completed
- Supplier quality assurance plan updated
- Special Characteristics plan and list updated

Level 6: Post-Testing Detailed Design Analysis

- Design finalized
- CAD Drawings finalized
- Weight / Cost BOM finalized
- Interface Designs finalized
- Requirements Compliance finalized
- Supplier quality assurance plan finalized
- Manufacturing plan finalized
- Quality plan finalized
- Joint summary finalized

Maturity Sub-Factor
Element 2: System Reliability & Maintainability (R&M) Maturity

Level 1: Requirements Analysis

- R&M Case Report completed. The R&M case report summarizes the contractor's framework for continually improving the contractor's R&M process to ensure that the reliability and maintainability requirements specified in the JLTV Purchase Description (Attachment 1) are achieved.
- Reliability (Mean Miles between Hardwar Mission Failure) and Maintainability (Maintenance Ratio, Mean Time to repair, Max-Time to Repair) Allocations completed down to the Line Replaceable Unit (LRU) level.

Level 2: Preliminary Design Analysis

- Design Failure Mode Effects and Analysis (DFMEA) completed in accordance with the JLTV Failure Description and Scoring Criteria (FDSC) (Attachment 38) and Operational Terrain (Attachment 1, Annex H) for the following sub-systems:
    - Hull / Structure / Frame
    - Suspension
    - Braking
    - B-Kit Protection
    - Power Generation and Distribution
    - Engine / Transmission / Transfer Case
    - Electronics Architecture / Software
    - Steering
- Fault Tree Analysis (FTA) completed in accordance with the JLTV FDSC (Attachment 38) and Operational Terrain (Attachment 1, Annex H) for all Mission Essential Functions (MEFs).
- Critical Items List (CIL) has been developed. CIL includes items whose failure would result in a hardware mission failure or Category III or higher Hazard Severity Rating as defined in MIL-STD-882D.
- Reliability (Mean Miles between Hardwar Mission Failure) and Maintainability (Maintenance Ratio, Mean Time to repair, Max-Time to Repair) Predictions are updated with complete Level 2 preliminary design analysis at the LRU level.
    - Predictions have been adjusted using the JLTV FDSC (Attachment 38) and Operational Terrain (Attachment 1, Annex H).
    - R&M predictions include failure rates for each LRU, failure rates are individually identified as estimated (E), calculated (C), or measured (M).
    - Predictions have been rolled up to the system level.
- Reliability Growth Plan and Reliability Growth Curves are IAW AMSAA Projection Maturity Model (PM2) (http://www.amsaa.army.mil/ReliabilityTechnology/ToolRequest.html to request Model) and are updated with complete Level 2 preliminary design analysis.

Maturity Sub-Factor
Element 2: System Reliability & Maintainability (R&M) Maturity

Level 3: Modeling & Simulation (M&S), Analysis, and Sub-System testing

- M&S, Analysis, and Sub-system level testing has been completed IAW the JLTV Operational Terrain (Attachment 1, Annex H), utilizing JLTV provided course inputs on the following sub-systems:
  - Hull / Structure / Frame
  - Suspension
  - Braking
  - B-Kit Protection
  - Power Generation and Distribution
  - Engine / Transmission / Transfer Case
  - Electronics Architecture / Software
- Steering M&S, Analysis, and Sub-System testing includes, but is not limited to:
  - Physics of failure (PoF)
  - Finite Element Analysis (FEA)
  - Dynamic/static modeling
  - Environmental stress screening (ESS)
  - Highly Accelerated Life Testing (HALT)
  - Dyno testing
- Sub-system integration analysis completed on Sub-Systems IAW the JLTV Operational Terrain (Attachment 1, Annex H), utilizing JLTV provided course inputs on the following sub-systems:
  - Hull / Structure / Frame
  - Suspension
  - Braking
  - B-Kit Protection
  - Power Generation and Distribution
  - Engine / Transmission / Transfer Case
  - Electronics Architecture / Software
  - Steering
- Digital Mock-up Assembly (DMA) has been completed to demonstrate design for maintainability and demonstrate maintainability predictions for the following sub-systems:
  - Hull / Structure / Frame
  - Suspension
  - Braking
  - B-Kit Protection
  - Power Generation and Distribution
  - Engine / Transmission / Transfer Case
  - Electronics Architecture / Software
  - Steering

Maturity Sub-Factor
Element 2: System Reliability & Maintainability (R&M) Maturity

Level 4: Detailed Design Analysis

- DFMEAs and FTAs have been updated with complete Level 3 M&S, Analysis, and Sub-system testing results.
- Failure Reporting and Corrective Action System (FRACAS) have been updated with complete Level 3 M&S, Analysis, and Sub-system testing results.
    - Failure modes have been identified
    - Root Cause has been determined
    - Corrective Action has been determined and implemented that reduces failure rate
    - Process has been modified or implemented to reduce the failure rate
    - Corrective action has been validated through analysis or test.
- R&M predictions at the LRU level have been updated with complete level 4 detailed design analysis.
    - Reliability and maintainability improvements have been identified at the sub-system level.
    - R&M prediction have been adjusted using the JLTV FDSC (Attachment 38) and Operational Terrain (Attachment 1, Annex H).
    - Predictions have been rolled up to the system level.
- Reliability Growth Plan and Reliability Growth Curves are IAW AMSAA PM2 (http://www.amsaa.army.mil/ReliabilityTechnology/ToolRequest.html to request Model) and are updated with complete 4 detailed design analysis.

Level 5: System Level Testing

- System has undergone at least 10,000 miles of R&M/durability testing IAW the JLTV Operational Terrain (Attachment 1, Annex H).
    - Vendor has provided detailed test plan (DTP).
    - DTP identifies test location, date, mission profile (RMS values, wave number spectrum values), and test miles.

Level 6: Post Testing Detailed Design Analysis

- Failure Reporting and Corrective Action System (FRACAS) have been updated with complete Level 5 system level testing results.
    - Failure modes have been identified
    - Root Cause has been determined
    - Corrective Action has been determined and implemented that reduces failure rate
    - Process has been modified or implemented to reduce the failure rate
    - Corrective action has been validated through analysis or test.
- System level R&M predictions have been updated with complete Level 5 system level test results.
- Reliability Growth Plan and Reliability Growth Curves are IAW AMSAA PM2 (http://www.amsaa.army.mil/ReliabilityTechnology/ToolRequest.html to request Model) and are updated with completed Level 5 system level test results.