

7 Tools for Performing Assessments of Manufacturing Risk and Readiness

7.1 The MRL Users Guide

The MsExcel-based MRL Users Guide was developed to supplement the MRL Deskbook and provide the user with most of the information he might need to perform an MRA at any stage of the acquisition or product development life-cycle. The Users Guide consists of six worksheets:

1. The first worksheet contains instructions on how to operate the Guide.
2. The second worksheet is the digital Users Guide that has the capability to display detailed information about the MRL or Product Life Cycle simply by clicking on a given cell or icon for which information is desired. The cells down Column A provide information about the specific threads that are traced in that row of the matrix. The cells and icons in Rows 2 through 6 display information about the phases of the Product Life Cycle, Acquisition Reviews, Acquisition Milestone descriptions, MRL and TRL definitions and background information for that stage of the product life-cycle.
3. The third worksheet is a list of Definitions for terms typically used in the acquisition and manufacturing readiness assessment process.
4. The fourth worksheet is a List of Acronyms commonly used in manufacturing and in the development and acquisition process.
5. The fifth worksheet contains a Printable MRL Matrix for those who wish to view or print the entire matrix on a single sheet.
6. The sixth worksheet contains a complete list of questions (criteria), derived from the MRL Matrix, to be used in assessments of manufacturing readiness. This Questionnaire is intended to be tailored to the system, subsystem, or component being assessed and be limited to questions focused on the target MRL or one level lower. The user may make a copy of the questionnaire which can then be sorted and tailored to select appropriate questions for the item and MRL targeted in the assessment.

7.1.1 Description of the “Mega-Data Sheet”

When specific cells in the main body of the MRL Matrix are selected, they will display a "Mega-Data Sheet" with the following information: First, the Thread designation (A1, B2, etc.) and MRL number (1 through 10) will appear at the top. The associated text (criteria) of the cell from the MRL Matrix will appear in the next block for reference to let the user know which cell is being viewed. The main body of the Data Sheet will contain the following information:

Purpose: The intent for doing the assessment for this particular sub-thread at this point in the life-cycle and the reason for doing the assessment of this particular thread at this point, i.e., what requirements/documents/procedures drive the assessment?

Sources of Information: This is where data can be collected for a particular MRL Assessment at that stage of the product life-cycle.

Questions (sometimes called "criteria"): These are directly derived from the text of the MRL

Matrix from the latest revised Version 11.3 of the MRL Questionnaire.

Additional Considerations: Sometimes from past experience, services or industry have optional questions they may want to ask for specific threads or sub-threads at specific times in the life-cycle. If so, these will be included in the mega-data sheet. This part of the Users Guide may change significantly over time.

Lessons Learned: These are particular lessons derived from past experience of personnel doing risk assessments in this particular sub-thread at this specific point in the product life-cycle. These may also change as people gain more experience doing assessments of manufacturing risk and readiness.

7.1.2 Compatibility

The MRL Users Guide version 13 and higher is compatible for use with MsExcel versions 2010 and 2013 using a standard Windows 7 or 8 Operating System.

7.2 Capability Manufacturing Readiness Level (CMRL) Questionnaire (Ref. Appendix C)

A new set of criteria has been established to assess the level of risk and readiness of developing a capability and/or commodities. These “Capability Manufacturing Readiness Levels,” or CMRLs, adopt most of the same structure and definitions used for MRLs with some terminology changes but are independent of the DOD acquisition time-dependent life-cycle. The criteria or questions to be asked in determining the CMRL of a developmental item or product are categorized by same nine threads and 22 sub-threads as MRLs, and CMRLs use the same scale from One (the most basic level) to Ten (the most advanced state of readiness). Terms specific to acquisition programs such as milestones and program phases have been modified or deleted, but the progression from immature capability to advanced is preserved. Specific reference to DOD design reviews has also been eliminated, though there remains a need for rigorous design analysis and reviews applicable to the production of the material or commodity being analyzed.