TRLs and MRLs: Supporting NextFlex PC 2.0

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TRLs and MRLs: Supporting NextFlex PC 2.0

Outline

• Purpose and Scope of Webinar
• Readiness Levels: Measures, Assessments, Process and Purpose
• Why MRLs are specifically applied within Institutes
• Technology Readiness Levels
  • As a Measure
  • Assessment Process
• Manufacturing Readiness Levels
  • As a Measure
  • Assessment Process
• Best Practice and Lessons Learned
• Questions?
Purpose and Scope of Webinar

• Provide Background for why Institutes use MRLs
• Provide Adequate Background on the role of TRLs and MRLs, and differentiate from TRAs and MRAs.
• Explain the Progression of MRLs and Requirements for Substantiation
• Discuss how MRLs can be used within the NextFlex Proposals
• Discuss Lesson Learned from Past Experience
• Answer Questions
Readiness Levels:
Measures, Assessments, Process and Purpose

• Technology Readiness Levels (and Manufacturing Readiness Levels) are a measurement scale, just like a ruler.
  • TRLs have definitions, documentation needs, and notes for use.
  • MRLs have definitions, 9 threads, 27 sub-threads, master matrix, documentation needs, examples situations, an interactive guide, and tools. (more comprehensive)
• Technology Readiness Assessment is a recommended process for how to determine critical technology elements, assess TRL level, and document results.
• Manufacturing Readiness Assessment is a recommended process for how to tailor MRL threads, apply criteria robustly, assess MRLs, document results, and recommend mitigation.
• The outcomes of utilizing TRLs and MRLs are to provide a common language and standard for demonstrated Tech and Mfg Maturity and for an estimate of risk in system acquisition (market success).
Mfg Institutes were created to fill the missing middle [ MRL 4-7]

Common terms
The “valley of death”
The “missing Bell Labs”
The “industrial commons”

Gap in Manufacturing Innovation

Manufacturing Readiness Level

Technology Readiness Level

1. Basic Technology Research
2. Research to Prove Feasibility
3. Technology Development
4. Technology Demonstration
5. System/Subsystem Development
6. System test, Launch & Operations
Common Starting Point

The Defense Acquisition Management Framework

User Needs

Technology Opportunities & Resources

A
Materiel Solution Analysis
Materiel Development Decision

B
Technology Maturation and Risk Reduction

C
Engineering and Manufacturing Development

IOC
Production & Deployment

FOC
Operations & Support

Pre-Systems Acquisition
Systems Acquisition
Sustainment
Common Starting Point
Commercial Product Development

User Needs
Technology Opportunities & Resources

Material Solution Analysis
Material Development Decision

Technology Development

Engineering and Manufacturing Development

Production & Deployment

IOC

FOC

Operations & Support

Pre-Systems Acquisition
Systems Acquisition
Sustainment

Research Opportunities
Demand

Prototyping & Testbeds

Design & Manufacturing

Production & Certification

Launch Support

Ideation
Business Case
Product Development
Launch

Preliminary Design Review
Critical Design Review
Production Decision
The Environment for Applying Readiness Levels

### Manufacturing Readiness Levels
- **Mfg. Processes Identified**
  - Concept Decision
  - Mfg. Processes Emerging
  - Producibility Assessments Initiated
  - Mfg. Processes Demonstrated in a Relevant Environment
  - Mfg. Processes in Development

### Technology Readiness Levels
- **Technology Maturity and Risk Reduction**
  - Process Maturity Demonstrated
  - All Materials Ready for LRIP
  - Mfg. Processes Operating at Target Quality, Cost and Performance

### MRL Exit Criteria
- **Assess at TRL 1 – 3**
  - Identify IB Sources
  - Characterize Basic Materials for Mfg.
  - Identify Material Concerns
  - Identify Funding
  - Identify Advanced ManTech Initiatives
  - Coordinate with Technology Plan
- **Assess at TRL 4**
  - Identify IB Gaps
  - Assess DFx
  - Baseline Materials and Issues
  - Funding/Budgeting for Trade Studies
  - Identify ManTech or Other Initiatives
- **Assess at TRL 5**
  - Mfg. Processes Identified
  - Key Processes Identified
  - Producibility Assessments Initiated
- **Assess at TRL 6**
  - Mfg. Processes Emerging
  - Producibility Assessments On-going
  - Mfg. Cost Drivers Identified
- **Assess at TRL 7**
  - Mfg. Processes in Development
  - Producibility Improvement Underway
  - Trade Studies
  - Supply Chain Management
- **Assess at TRL 8**
  - Mfg. Processes Operating at Target Quality, Cost and Performance
  - Lean/Six Sigma
  - Production in Place
  - Meeting or Exceeding Cost, Schedule and Performance Goals

### Production and Deployment
- **FRP Decision**
  - Monitor and Manage all Key Characteristics at a Six Sigma Level
  - Funding to Meet 6σ goals
  - No Make/Buy Changes
  - Key/Critical Suppliers all meet Six Sigma Goals

### Considerations
- **Material Solution Analysis**
  - Technology Readiness Levels
  - Manufacturing Readiness Levels
  - MRL Exit Criteria
Technology Readiness Levels:

- Technology Readiness Levels were originally developed by NASA in the 1980s.
- TRL are based on a scale from 1 to 9 with 9 being the most mature technology. A TRL of 6 is aligned with PDR.
- Technology Readiness Levels (TRL) are a method of estimating the technology maturity of program during the development process, and the readiness of the program to proceed to subsequent stages. (Assessment is limited to Critical Technology Elements (CTE) of Program).
- TRLs represent a logical procession of “DEMONSTRATED” capabilities, ranging from lab experiments to component prototypes to subsystems and systems. Demonstration also progress in terms of environment, from artificial to relevant to operational.
- TRLs are a measure of technology maturity through performance.
## Technology Readiness Level Definitions

<table>
<thead>
<tr>
<th>Technology Readiness Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Basic principles observed and reported</td>
<td>Lowest level of technology readiness. Scientific research begins to be translated into applied research and development (R&amp;D). Examples might include paper studies of a technology’s basic properties.</td>
</tr>
<tr>
<td>2. Technology concept and/or application formulated</td>
<td>Invention begins. Once basic principles are observed, practical applications can be invented. Applications are speculative, and there may be no proof or detailed analysis to support the assumptions. Examples are limited to analytic studies.</td>
</tr>
<tr>
<td>3. Analytical and experimental critical function and/or characteristic proof of concept</td>
<td>Active R&amp;D is initiated. This includes analytical studies and laboratory studies to physically validate the analytical predictions of separate elements of the technology. Examples include components that are not yet integrated or representative.</td>
</tr>
<tr>
<td>4. Component and/or breadboard validation in laboratory environment</td>
<td>Basic technological components are integrated to establish that they will work together. This is relatively “low fidelity” compared with the eventual system. Examples include integration of “ad hoc” hardware in the laboratory.</td>
</tr>
<tr>
<td>5. Component and/or breadboard validation in relevant environment</td>
<td>Fidelity of breadboard technology increases significantly. The basic technological components are integrated with reasonably realistic supporting elements so they can be tested in a simulated environment. Examples include “high-fidelity” laboratory integration of components.</td>
</tr>
<tr>
<td>6. System/subsystem model or prototype demonstration in a relevant environment</td>
<td>Representative model or prototype system, which is well beyond that of TRL 5, is tested in a relevant environment. Represents a major step up in a technology’s demonstrated readiness. Examples include testing a prototype in a high-fidelity laboratory environment or in a simulated operational environment.</td>
</tr>
<tr>
<td>7. System prototype demonstration in an operational environment.</td>
<td>Prototype near or at planned operational system. Represents a major step up from TRL 6 by requiring demonstration of an actual system prototype in an operational environment (e.g., in an aircraft, in a vehicle, or in space).</td>
</tr>
<tr>
<td>8. Actual system completed and qualified through test and demonstration.</td>
<td>Technology has been proven to work in its final form and under expected conditions. In almost all cases, this TRL represents the end of true system development. Examples include developmental test and evaluation (DT&amp;E) of the system in its intended weapon system to determine if it meets design specifications.</td>
</tr>
<tr>
<td>9. Actual system proven through successful mission operations.</td>
<td>Actual application of the technology in its final form and under mission conditions, such as those encountered in operational test and evaluation (OT&amp;E). Examples include using the system under operational mission conditions.</td>
</tr>
</tbody>
</table>
Technology Readiness Assessments

• Well defined and rigorous process for assessing the technology maturity of a product or system using TRLs.
• DoD, NASA, and other organizations have processes.
• DoD TRA Deskbook (2011) is most widely used.
  • Establish a TRA Plan and Schedule
  • Form a SME Team
  • Identify Technologies To Be Assessed
  • Collect Evidence of Maturity
  • Assess Technology Maturity
    • SME team Assessment
    • Prepare, Coordinate, and Submit a TRA Report
    • Review and Evaluation
• In most cases, only Critical Technology Elements (CTEs) are assessed.
  • CTEs are those that directly related to system performance requirements or design critical.
  • CTEs should be identified in the context of the program’s systems engineering process, based on a comprehensive review of the most current system performance and technical requirements and design
Why Aren’t Technology Readiness Levels Enough?

• TRL Definitions deal primarily with demonstration of performance.
  • Within increasingly realistic environments.
• Initially, during a 2000 manufacturing study of the FCS critical technologies, TRLs were rejected as a sole method of assessing readiness.
• TRLs do not encompass any production or sustainment attributes, and cannot answer questions such as:
  • Is the prototype level of performance reproducible in items 2-1000?
  • What will these cost in production?
  • Can these be made in a production environment by someone without a PhD?
  • Is the acquisition schedule realistic
  • Are the key materials and components available?
• So Manufacturing Readiness Levels were proposed, along with an initial scale and entrance criteria.
• MRLs measure the maturity (or readiness) of a technology for scale up and commercialization.
Manufacturing Readiness Levels:

• Manufacturing Readiness Levels were originally developed by DoD ManTech starting in 2001

• MRLs are based on a scale from 1 to 10 with 10 being the most mature manufacturing capability. An MRL of 6 is aligned with PDR, and an MRL of 8 is aligned with a Production Decision.

• The MRL scale generally correlates with TRLs, with an additional level consisting of continuous improvement and lean practices.

• MRLs indicate the level of program risk – compared to an ideal progression of demonstrated knowledge- for meeting production goals (including cost, schedule, performance) based upon successful completion of manufacturing-related activities during development.

• Program maturity and readiness are compared to the “target” MRL based upon the product development phase.

• Assessment of “Level” is not based upon ‘Quick look,’ but instead based upon substantiation, usually in the form of supporting documents, tasks, or benchmarks. MRLs have a great deal more depth than TRLs in descriptions and criteria.
# Manufacturing Readiness Level Definitions

<table>
<thead>
<tr>
<th>MRL</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Manufacturing Feasibility Assessed</td>
</tr>
<tr>
<td>2</td>
<td>Manufacturing Concepts Defined</td>
</tr>
<tr>
<td>3</td>
<td>Manufacturing Concepts Developed</td>
</tr>
<tr>
<td>4</td>
<td>Capability to produce the technology in a laboratory environment.</td>
</tr>
<tr>
<td>5</td>
<td>Capability to produce prototype components in a production relevant environment.</td>
</tr>
<tr>
<td>6</td>
<td>Capability to produce a prototype system or subsystem in a production relevant environment.</td>
</tr>
<tr>
<td>7</td>
<td>Capability to produce systems, subsystems or components in a production representative environment.</td>
</tr>
<tr>
<td>8</td>
<td>Pilot line capability demonstrated. Ready to begin low rate production.</td>
</tr>
<tr>
<td>9</td>
<td>Low Rate Production demonstrated. Capability in place to begin Full Rate Production.</td>
</tr>
<tr>
<td>10</td>
<td>Full Rate Production demonstrated and lean production practices in place.</td>
</tr>
</tbody>
</table>
MRL- Further Definition of Terms

• **Production Relevant Environment** – An environment normally found during MRL 5 and 6 that contains *key elements of production realism not normally found in the laboratory environment* (e.g. uses production personnel, materials or equipment or tooling, or process steps, or work instructions, stated cycle time, etc.). *May occur in a laboratory or model shop if key elements or production realism are added.*

• **Production representative environment** – An environment normally found during MRL 7 (probably on the manufacturing floor) that contains *most of the key elements* (tooling, equipment, temperature, cleanliness, lighting, personnel skill levels, materials, work instructions, etc) that will be present in the shop floor production areas where low rate production will eventually take place.

• **Pilot line environment** – An environment normally found during MRL 8 in a manufacturing floor production area that incorporates *all of the key elements* (equipment, personnel skill levels, materials, components, work instructions, tooling, etc.) required to produce production configuration items, subsystems or systems that meet design requirements in low rate production. To the maximum extent practical, the pilot line should utilize rate production processes.
### MRL Descriptions - DETAIL

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<th>Definition</th>
<th>Description</th>
<th>Phase</th>
</tr>
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<tr>
<td>1</td>
<td>Manufacturing Feasibility Assessed</td>
<td>This is the lowest level of manufacturing readiness. The focus is on a top level assessment of feasibility and manufacturing shortfalls. Basic manufacturing principles are defined and observed. Begin basic research in the form of studies (i.e. 6.1 funds) to identify producibility and material solutions.</td>
<td>Pre Concept Refinement</td>
</tr>
<tr>
<td>2</td>
<td>Manufacturing Concepts Defined</td>
<td>This level is characterized by developing new manufacturing approaches or capabilities. Applied Research translates basic research into solutions for broadly defined military needs. Begin demonstrating the feasibility of producing a prototype product/component with very little data available. Typically this is applied research (i.e. 6.2) in the S&amp;T environment and includes identification and study of material and process approaches, including modeling and simulation.</td>
<td>Pre Concept Refinement</td>
</tr>
<tr>
<td>3</td>
<td>Manufacturing Concepts Developed</td>
<td>This begins the first real demonstrations of the manufacturing concepts. This level of readiness is typical of technologies in the S&amp;T funding categories of 6.2 and 6.3. Within these levels, identification of current manufacturing concepts or producibility has occurred and is based on laboratory studies. Materials have been characterized for manufacturability and availability but further evaluation and demonstration is required. Models have been developed in a lab environment that may possess limited functionality.</td>
<td>Pre Concept Refinement</td>
</tr>
<tr>
<td>4</td>
<td>Capability to produce the technology in a laboratory environment.</td>
<td>Required investments, such as manufacturing technology development identified. Processes to ensure manufacturability, producibility and quality are in place and are sufficient to produce technology demonstrators. Manufacturing risks identified for prototype build. Manufacturing cost drivers identified. Producibility assessments of design concepts have been completed. Key Performance Parameters (KPP) identified. Special needs identified for tooling, facilities, material handling and skills.</td>
<td>Concept Refinement (CR) leading to a Milestone A decision.</td>
</tr>
<tr>
<td>5</td>
<td>Capability to produce prototype components in a production relevant environment.</td>
<td>Initial mfg approach developed. Majority of manufacturing processes have been defined and characterized, but there are still significant engineering/design changes. Preliminary design of critical components completed. Producibility assessments of key technologies complete. Prototype materials, tooling and test equipment, as well as personnel skills have been demonstrated on a subset of subsystems.</td>
<td>Technology Development (TD) Phase.</td>
</tr>
<tr>
<td>6</td>
<td>Capability to produce a prototype system or subsystem in a production relevant environment.</td>
<td>Mfg strategy refined and integrated with Risk Mgt Plan. Identification of enabling/critical technologies and components is complete. Prototype materials, tooling and test equipment, as well as personnel skills have been demonstrated on components in a production relevant environment, but many manufacturing processes and procedures are still in development. Manufacturing technology development efforts initiated or ongoing. Producibility assessments of key technologies and components ongoing. Cost model based upon detailed end-to-end value stream map.</td>
<td>Technology Development (TD) phase leading to a Milestone B decision.</td>
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<td>7</td>
<td>Mfg strategy refined and integrated with Risk Mgt Plan. Identification of enabling/critical technologies and components is complete. Prototype materials, tooling and test equipment, as well as personnel skills have been demonstrated on components in a production relevant environment, but many manufacturing processes and procedures are still in development. Manufacturing technology development efforts initiated or ongoing. Producibility assessments of key technologies and components ongoing. Cost model based upon detailed end-to-end value stream map.</td>
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MRL in Depth: Nine “Threads”

- **Technology and the Industrial Base**: Requires an analysis of the capability of the national technology and industrial base to support the design, development, production, operation, and maintenance support of the system.
- **Design**: Requires an understanding of the maturity and stability of the evolving system design and any related impact on manufacturing readiness.
- **Cost and Funding**: Requires an analysis of the adequacy of funding to achieve target manufacturing maturity levels. Examines the risk associated with reaching manufacturing cost targets.
- **Materials**: Requires an analysis of the risks associated with materials (including basic/raw materials, components, semi-finished parts, and subassemblies).
- **Process Capability and Control**: Requires an analysis of the risks that the manufacturing processes are able to reflect the design intent (repeatability and affordability) of key characteristics.
- **Quality Management**: Requires an analysis of the risks and management efforts to control quality, and foster continuous improvement.
- **Manufacturing Workforce** (Engineering and Production): Requires an assessment of the required skills, availability, and required number of personnel to support the manufacturing effort.
- **Facilities**: Requires an analysis of the capabilities and capacity of key manufacturing facilities (prime, subcontractor, supplier, vendor, and maintenance/repair).
- **Manufacturing Management**: Requires an analysis of the orchestration of all elements needed to translate the design into an integrated and fielded system (meeting Program goals for affordability and availability).
## MRL in Detail - Criteria Matrix

<table>
<thead>
<tr>
<th>S&amp;T Phase</th>
<th>Acq Phase</th>
<th>MRL 1-3</th>
<th>MRL 4</th>
<th>MRL 5</th>
<th>MRL 6</th>
<th>MRL 7</th>
<th>MRL 8</th>
<th>MRL 9</th>
<th>MRL 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology Transition to Production</td>
<td>Technology Maturity</td>
<td>TRLs 1-3</td>
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<tr>
<td>Potential manufacturing sources identified</td>
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<td>Industrial base capabilities and gaps/risks identified for key technologies, components, and key processes.</td>
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<td>MRL considered</td>
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</table>

### MRL 1 to 10

- **Technology Transition to Production**
  - **Technology Maturity**: TRLs 1-3
  - **Technology Transition to Production**: Identified potential sources
  - **Manufacturing Technology Development**: MRL considered
  - **Manufacturing Technology Development**: MRL Science and Advanced MRL Technology requirements identified
  - **Manufacturing Technology Development**: Required manufacturing technology development efforts initiated.
  - **Manufacturing Technology Development**: Manufacturing technology efforts continuing. Required manufacturing technology development solutions demonstrated in a production relevant environment.
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### Technology & Industrial Base

- **MRL 1 to 10**
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### Conclusion

The table above represents the MRL in Detail - Criteria Matrix, focusing on the DoD Manufacturing Readiness Levels (MRLs) across different phases and stages of technology transition to production. Each MRL 1 to 10 level is detailed with specific criteria and requirements that must be met to advance to the next level, ensuring a structured and systematic approach to technology readiness and industrial base readiness.
**MRL in Detail- Criteria Matrix**

<table>
<thead>
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<th>S&amp;T Phase</th>
<th>Acq Phase</th>
<th>DoD Manufacturing Readiness Levels (MRLs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1 - 6.2 SBIR</td>
<td>Pre CR</td>
<td>7.8</td>
</tr>
<tr>
<td>6.3 SBIR</td>
<td>CR - MS A</td>
<td>7.8</td>
</tr>
<tr>
<td>6.3 / 6.4 B</td>
<td>MRL 4</td>
<td>7.8</td>
</tr>
<tr>
<td>Thread</td>
<td>Sub-Thread</td>
<td>MRL 8</td>
</tr>
<tr>
<td>Technology &amp; Industrial Base</td>
<td>Technology Maturity</td>
<td>MRL 9</td>
</tr>
<tr>
<td>Technology Transition to Production</td>
<td>Potential manufacturing sources identified for technology Needs. (Commercial/Government, Domestic/Foreign)</td>
<td>MRL 10</td>
</tr>
<tr>
<td>Manufacturing Technology Development</td>
<td>Mfg Science &amp; Advanced Mfg Technology requirements identified</td>
<td></td>
</tr>
<tr>
<td>Cost Analysis</td>
<td>Required manufacturing technology development efforts initiated</td>
<td></td>
</tr>
<tr>
<td>Manufacturing Technology Efforts</td>
<td>Manufacturing technology efforts continuing. Required manufacturing technology development solutions demonstrated in production relevant environment.</td>
<td></td>
</tr>
<tr>
<td>Producibility</td>
<td>Detailed producibility trade studies using knowledge of key design characteristics and related manufacturing process capability. Producibility improvements initiated.</td>
<td></td>
</tr>
<tr>
<td>Cost &amp; Funding</td>
<td>Program/ projects have budget estimate for costs.</td>
<td></td>
</tr>
<tr>
<td>Program has budget estimate for incentives in place.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industrial Capability Assessment</td>
<td>Industrial Capability Assessment (CCA) for MS C has been completed. Industrial capability is in place to support SDD. Sources are available, multifaceted where cost-effective or necessary to mitigate risk.</td>
<td></td>
</tr>
<tr>
<td>Production budgets sufficient for production.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production budget is in place to support start of LRIP.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Material design is stable. Design changes are few and generally reflect corrective changes identified in LRIP.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design change traffic is limited to minor configuration changes. All KCs are controlled to six sigma or other appropriate quality levels.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MRL 1 to 10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Producibility assessments of key technologies /components and producibility trade studies completed.** Results used to shape System Development Strategy and plans for EMD technology insertion.
Manufacturing Readiness Assessments

• Well defined and rigorous **process** for assessing the status of a product or system against standard benchmarks using MRLs.

• Tailoring of the main matrix criteria is permitted based upon specific situations. MRLs are NOT limited to critical technology items.

• DoD has published an MRL Deskbook describing the MRA Process.
  • Determine Scope
  • Determine Assessment Taxonomy and Schedule
  • Form and Orient Assessment Team
  • Request Contractors Perform Self-Assessment
  • Set Agenda for Site Visits
  • Conduct the Assessment of Manufacturing Readiness
    • Start with MRL Benchmark, work backwards along Threads
    • Consider self assessment, use VSM, WBS, mfg flow and other techniques to understand and document process.
    • Discuss tooling and supply chain management, ask for evidence & Documentation
  • Prepare the Assessment Report and MMP
Lessons Learned- Best Practices 1/2

• MRL is **limited** by TRL- If Technology or design is not sufficiently defined and demonstrated, how can manufacturing capability be proven. MRL may exceed TRL by one level in most cases.

• MRL is **NOT** about the number- focus on the meaning of each level, the number indicates progression and is used for communication

• MRL **cannot** be a 4.5 or 5.725- Levels represent stages, consider activities or milestones that will demonstrate maturity.

• MRLs are **not** an auditing mechanism- the descriptions, threads and criteria are mean to be adapted to the specific nature of a product under development. Provide reasoning for tailoring.

• The time, effort, and investment to progress from MRL 4 to 5 is **not** similar to MRL 6 to 7.
Lessons Learned- Best Practices 2/2

• TRL or MRL is a contact sport- claims must be made based upon actual experience by team members, at team facilities, with known technology scope. One cannot claim a TRL or MRL of a 787 aircraft due to Boeing’s experiences if one is not Boeing.

• In proposal planning, consider what steps would be necessary to progress through each MRL, and schedule milestones.

• Do NOT start with an MRL 4 and then magically have the project end at an MRL of 7. Describe progression of MRL 4 to 5, then 6, then 7. (if MRL 7 is indicated). Integrate with increasing TRL in program plan.

• Institute Project may involve limited demonstrations of Manufacturing Areas, or Technology Platform Demonstrations. If so, tailor the MRL matrix to focus on limited demonstration, but indicate what would be necessary to pursue commercialization.

• A formal MRA is not require for a pre-proposal or proposal.
TRL / MRL Resources

• TRL and TRA- Several references, an example is:

• MRL and MRA- one key location
  http://dodmrl.com
  Deskbook / Definitions / Matrix / Interactive User Guide / POCs
Questions