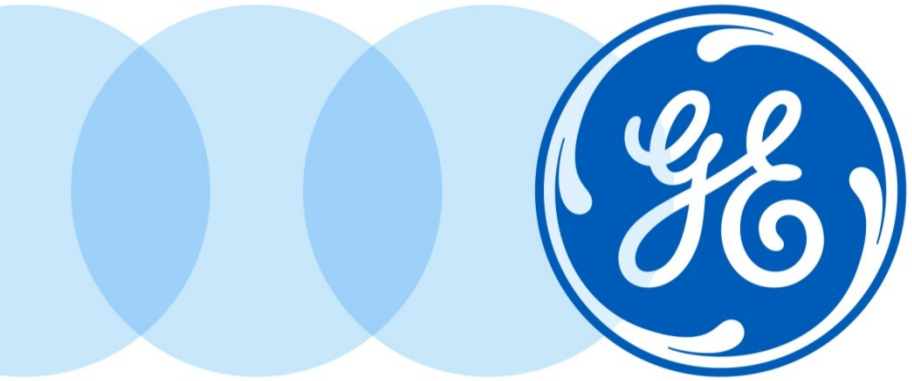

Adaptation of MRL's to Integrate into a Company's Operating System

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Imagination at work

Rationale

The MRL process is a government document

- Nomenclature is DoD based
- Not all terms are in normal industry use.

The MRL matrix is a DoD reference document

- To institutionalize the process the matrix needs to be a working tool for teams to use.

Clarify that modifications while maintaining context is acceptable

- Any adaptions while following the referenced document need to be acceptable to DoD.

Approach

- Customize the MRL process and matrix tools utilizing internal or external resources in an effort to meet industry norms and verbiage

- Adaption of the tool to become a working document for teams and an improved communication tool

Example

- Simplify the wording.
- Add Emphasis where needed.

http://www.dodmrl.com/

		DoD MRL Criteria Matrix Version 11.5 dated August 2015	GE Aviation MRL Assessment Master_Aug_1_2014
Criteria	Metric	**PDR**	**MRL6** **Capability** to produce production configuration, prototype parts & in a **production relevant** environment (Lean Lab/Mfg Site)
Technical	**Technical**	Should be assessed at TRL 6.	Should be at TRL 6
Design	**B.1 - Producibility Program**	Producibility assessments and producibility trade studies (performance vs. producibility) of key technologies/components completed. Results used to shape Acquisition Strategy, Systems Engineering Plan (SEP), Manufacturing and Producibility plans, and planning for EMD or technology insertion programs. Preliminary design choices assessed against manufacturing processes and industrial base capability constraints. Producibility enhancement efforts (e.g. Design For Manufacturing, Assembly, Etc. (DFX)) initiated.	Have design and Manufacturing **trades been completed** to produce representative/baseline hardware, and have preliminary design choices been assessed against manufacturing process capability constraints? Have DFM, DFA and DFT activities been initiated as applicable?

Example

- Make it a working document.
- Leverage what is out there

Engine: Part Name	
Date	8/1/2014
Team Member	**Work Area**
Jim	MRL Leader
Barb	Design Engineer
Ted	Materials Engineer
Bob	Site Adv. Mfg. Eng. (Facilities & Cost)
Joe	Site VPE (Process Cap., Mfg. & Mfg. Mgt.)
JoAnn	Site Quality Eng. (Quality & Personnel)
John	Special Process Eng.. (Turn, Broach & ECM)
Steve	Sourcing / Forging Expert
Alex	EHS

Picture

Process Step	MRL	Status / Comments
Step 1		
Step 2		
Step 3		
Step 4		
Step 5		
Step 6		
Step 7		
Step 8		
Step 9		
Step 10		
Overall Rating		

Rating

GREEN: if plan to reach the required MRL Score is well timed and lacks "invention needed" line items

YELLOW: if plan to reach the required MRL Score has slight schedule challenge and/or "invention needed" line items that we have a good plan to solve

RED: if plan to reach the required MRL score will not be in time and/or invention needed line items are high risk

Criteria	Metric		MRL6 **Capability** to produce production configuration, prototype parts & in a **production relevant** environment (Lean Lab/Mfg Site)	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7	Step 8
Technical	**Technical**	Should be assessed at TRL 6.	Should be at TRL 6								
Technology & Industrial Base	**TECHNOLOGY TRANSITION TO PRODUCTION)**	Industrial base capabilities assessment for MS B has been completed. Industrial capability in place to support manufacturing of development articles. Plans to minimize sole/ foreign sources and obsolescence issues complete. Need for sole/single/foreign sources justified. Potential alternative sources identified.	Is industrial base **capability** to produce Devel. & FETT hardware **in place** and have alternate suppliers for FRP been identified to minimize or justify Sole/Single/ Foreign sources?								
Design	**B.1 Producibility Program**	Producibility assessments and producibility trade studies (performance vs. producibility) of key technologies/components completed. Results used to shape Acquisition Strategy, Systems Engineering Plan (SEP), Manufacturing and Producibility plans, and planning for EMD or technology insertion programs. Preliminary design choices assessed against manufacturing processes and industrial base capability constraints. Producibility enhancement efforts (e.g. Design For Mfg, Assembly, Etc. (DFX))	Have design and Manufacturing **trades been completed** to produce representative/baseline hardware, and have preliminary design choices been assessed against manufacturing process capability constraints? Have DFM, DFA and DFT activities been initiated as applicable?								
	B.2 Form, Fit, & Function Maturity	System allocated baseline established. Product requirements and features are well enough defined to support preliminary design review. Product data essential for subsystem/system prototyping has been released, and all enabling/critical component have	Is the PDR complete; are all critical technologies and Key Characteristics (KC) verified; is **engineering definition/ data required for manufacturing components issued** and validated a production relevant environment - a LL, LRP, or FRP source?								
	B.2.1 Unique Components	Plans completed to address unique component issues.	Are **plans completed** to address unique part/ assembly issues?								
	B.2.2 Key Characteristics	Tolerances established for Key Characteristics.	Are **Tolerances established** for Key Characteristics of the part?								

http://www.aptcorp-us.com/resources.html

Summary

Discuss paragraph 8.5 – MRL Criteria for Industry

- Are there any issues with adapting the desk book and matrix to commercial practice?