

Joint Marking Qual Working Group

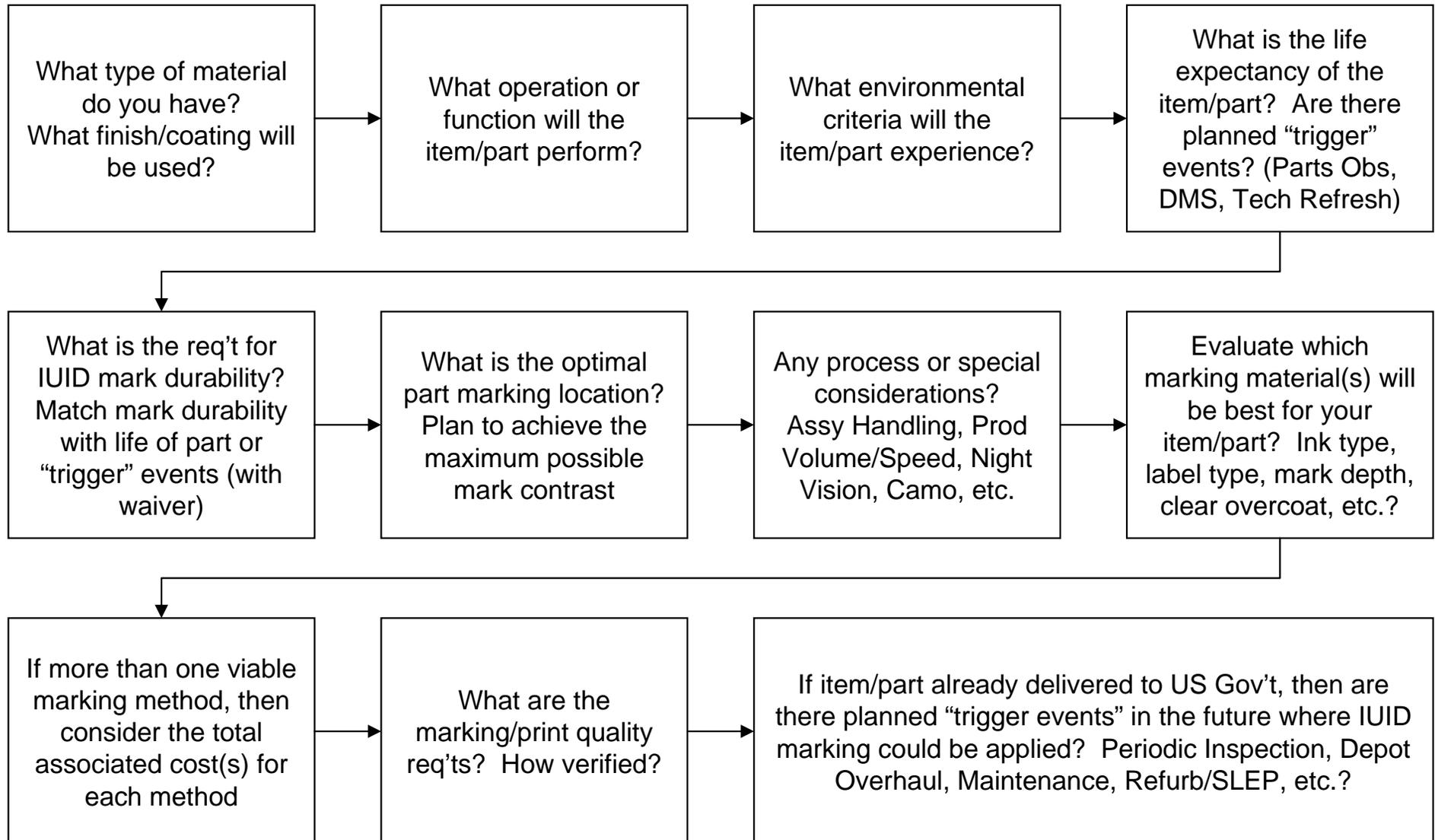
IUID Marking Flowchart

*** DRAFT 2 ***

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IUID Marking Flowchart

The Following Questions Should be Asked & Answered, to Achieve an Optimal IUID Marking Solution



Material Type/Finish

- Consult the GEIA Matrix for Test Data Summary Sheets and Test Reports of IUID Marking by Material Type & Finish
- Once a Material Receives Primer/Paint, it May be Easier to Determine Best Marking Method (since substrate not in direct contact with mark)
- For Invasive, Direct Part Marking Methods; Also Consider Material Thickness and Depth of Mark

Item/Part Function

- Consider What Function the Item/Part Must Perform
 - Do Not Apply Mark Where Surface Wear is a Feature or Issue
 - Parts Immersed in or Exposed to Liquid (e.g., fuel tank) Have Unique Marking Req'ts
 - Parts in Close Proximity to High Heat Source
 - Ground/Sea Usage? vs. Aero/Space Part?
 - Mission or Safety Critical Part?

Environmental Criteria

- Consider Environment in Which the Mark Must Maintain Readability
 - High/Low Temp, Sand/Dust, Salt Spray, Fluid Exposures, Humidity, ECS/Ram Air, etc.
- Harsh Environments Require Special Engineering Analysis
- Consult GEIA Matrix for Environmental Guidance

Life Expectancy

- Consider the Life Expectancy of the Part
 - Is it Spared & Replaced Every 2 years, or Never Replaced in 20 years?
- Are There Planned “Trigger” Events to Touch the Part at Periodic Intervals?
 - Parts Obsolescence? Diminishing Mfg Sources? Technical/Capability Refresh?
 - Phase Inspection, Depot Overhaul, Routine Maintenance, Refurb/Serv Life Extension Program
 - Most Likely Not Feasible to Put a 20 year Mark on a Part that is Removed & Upgraded Every 2 years (need waiver from MIL-STD-130, if applicable)

Durability Req'ts

- What is the Contract Req't for UII Mark Durability (Permanency)?
- Will Mark be Exposed to Above Average Wear and Tear?
 - Do Not Mark Rotating, Moving or Bearing Surfaces
- Match Part Mark Durability with Life of Part
 - If Not Feasible, Match Mark Durability with Most Practical “Trigger” Event(s); will need MIL-STD-130 waiver if applicable

UII Mark Location

- Avoid Complex/Compound Contour Areas
 - Curved Surfaces More Difficult (vs. Flat)
- Locate UII Mark on Part so it is Visible in Installed Position or Accessible to Mark Reader
 - Allow for Max Space Between UII Marks on Different Parts, Close Proximity Marks Can Fool Readers
- Do Not Locate Mark in High Wear & Tear Areas
 - Do Not Place Mark on Rotating, Moving or Bearing Surfaces; or in Airstream; or in High-Maint Areas
- The Single Largest Contributor to UII Mark Quality Grade is Contrast
 - Plan UII Mark Location & Color for Maximum Contrast With Surface

Process or Special Issues

- Any Process Considerations?
 - How Will Part be Handled in Assembly?
 - Production Volume/Speed Req'ts?
 - Any Marking Impact to Structural Integrity or Form-Fit-Function-Interface (F³I)?
- Any Special Considerations?
 - Night Vision & Camouflage Goals Contrary to UID Contrast Req't, etc.
 - Put Mark on Non-Night Vision / Non-Camo Surface When Possible

Marking Material(s)

- Several Inks Available with Differing Properties (viscosity, acid level, etc.)
- Many Types of Labels with Varying Adhesive, Contrast, Durability Properties
- Determine Optimum Marking Depth if Invasive, Direct Marking Method is Chosen
 - Eng Analysis to Avoid Inducing Corrosion, Stress, etc.
- Best to Apply Clear Overcoat or Laminate to Direct Ink Marks or Ink-Printed Labels

Total Cost(s)

- If More Than One Marking Method is Viable, Then Consider the Total Costs Involved
 - In Most Cases, When All Other Factors Are Equal; Using a Label or Directly Applied Ink (with clearcoat) is a “Better Value” → So Long as Durability is Not an Issue
- Other Invasive / Direct Part Marking Methods Require More Engineering Analysis
- Consider that New Nameplates Can Add Some Weight to a Part or System
- Consider the Cost of the Readers Required for the Selected Marking Method

Mark Quality Grading

- Become Aware of the Method You Will Use to Verify UII Mark Quality
 - Some Test Set-up's Have Variables
- Determine Verifying Equipment to be Used
 - Some Equipment More Capable Than Others
- MIL-STD-130M Released 02 Dec 2005

For JMQWG Purposes, the Following Definitions Apply:

Validate = Does the UII mark content portray the correctly encoded information regarding the part

Verify = Does the UII mark meet the quality grade that it is supposed to meet

Already Delivered

- Help Your Customer Plan for UID Marking of Items/Parts Already Delivered
 - Jointly Discuss: UID Parts List, Durability Trade-Off's, UID Equipment Required, etc.
- Plan for Program UID “Trigger Events” that are Least Disruptive to Field Users