

Joint Industry/Gov't IUID Marking  
Qual Working Group (JMQWG)

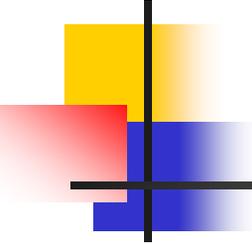
Debrief to GEIA

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Meeting Held

15 June 2005

in Fort Worth, TX



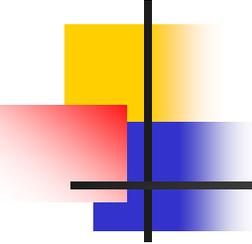
# Mission Statement

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Joint Industry/Gov't Marking Qualification Venture – Perform a common set of IUID direct 2D mark qualification, and output of subsequent report data for the following 3 criteria, that most of the DoD supplier base can use with little or no further effort required:

- (1) **IUID Marking Methods** (dot peen, laser/chem etch, direct ink, label, etc)
- (2) **Material Types & Finishes** (80% common to most of Industry)
- (3) **Environmental Criteria** (80% common to most of Industry or use worst case)

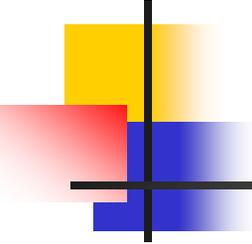
Goal is to capitalize on a “consortium approach” and use Qual data sharing to the maximum extent possible. This is not considered a competitive advantage item, since all DoD suppliers must comply with the IUID initiative.



# Meeting Deliverables

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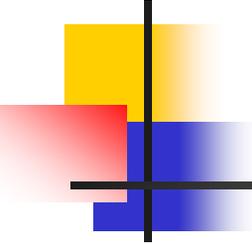
- End Product Agreements Defined
- Merge With NASA/DoD/USCG Existing Qual Matrix Efforts
- Merge Standardized Qual Summary Sheets with NASA Effort
- Quantified Benefits for Venture
- Plan for Follow-On Mtg's
- GEIA to Sponsor as G-33 UID WG Task



# End Product Deliverables

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- Must be **Non-Proprietary**
- Guidance-Only Document Hosted on Web
  - URL Links to Database & Ref Doc's
  - OSD (D. Pauling Office) is Control Point
- Reference in MIL-STD-130 and/or DoD IUID Implementation Guide
- Aids in Focus on Reasonable Range for Marking Method Based on Material Type



# UAH Concept Demo

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- Univ Alabama – Huntsville Volunteered to Demo IUID Mark Qual Testing on Some Typical Aerospace Material Types
- Capable Lab & Equipment
  - Have Some Industry-Donations
- Student Research Labor Available
- Will Coordinate With NASA Matrix for Untested Material-Method Combinations

# Example Matrices (NASA/DoD)

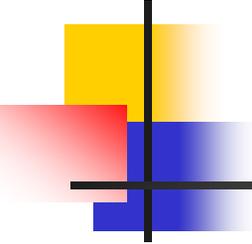
MATERIAL TO BE MARKED \ MARKING PROCESS	METALLIC S										NON-METALLIC S									
	Aluminum	Anodized	Beryllium	Carbon Steel	Copper	Brass	Magnesium	Titanium	Ceramics	Glass	Cloth	Painted	Plastics	Rubber	Teflon	Wood	Others			
Abrasive Blast	*	*		*	*	*	*	*	*		*	*		*		*	*			
Adhesive Dispensing	*	*	*	*	*	*	*	*	*	1	*	*	*	*	*	*	*			
Cast, Forge or Mold	*	*	*	*	*	*	*	*	*											
Dot Peen	*			1	*	1					1	*								
Electro-Chem Coloring	*	*	*	*	*	*	*	*	*											
Electro-Chem Etching	*	*	*	*	*	*	*	*	*											
Embroidery										*										
Engraving/Milling	*	*		*	*	*	*	*	*		1	*			*		*			
Laser Bonding	*		*	*	*	*	*	*	*											
Laser - Short Wave Lengths	*	1	*	*	*	*	*	*	*		1	*	*	*	*	*	*			
Laser - Visible Wave Lengths	1	1	*	1	*	*	*	*	*		1	*					*			
Laser - Long Wave Lengths		1							*		1	*					*			
Laser Shot Peening	*	1	2	2	*	2	2	*	*		1	*								
LENS	*	1	*	*	*	*	*	*	*											
LISI	*	2	*	*	*	2	2	*	*											
Ink Jet	*	*	*	*	*	*	*	*	*	1	*	*	*	*	*	*	*			
Silk Screen	*	*	*	*	*	*	*	*	*		*	*	*	*	*	*	*			
Stencil	*	*	*	*	*	*	*	*	*		*	*	*	*	*	*	*			
Thin Film Deposition	*	*	*	*	*	*	*	*	*		*	*	*	*	*	*	*			

- \* = Acceptable marking process for noted material
- 1 = Contact Engineering before proceeding
- 2 = Marking method still under development

Marking Process	Part Environments															
	Ground and Sub-Orbital Operations (DoD Supplied)										Low Earth Orbit Operations (NASA Supplied - MISSE)					
	Abrasion	Chemicals - Deter	Chemicals - Fuels	Chemicals - Grease	Chemicals - Hydraulic Fluid	Chemicals - Lubricating Oil	Foreign Object Damage (FOD)	High Heat (Engines) +2000°F	Temperature: -30°F to 140°F	Ultra-Violet	Salt Spray	Atomic oxygen	High Energy Particles	Ultra-Violet (UV)	Debris & Meteoroid Impact	Temperature Extremes
Laser-Etch (Direct)	X	X	X	X	X	X	X	X	X	X						
Laser-Etch (Gas Assisted)				X												
Laser-Induced Surface Improvement		X	X	X	X	X	X	X	X	X						
Laser-Induced Vapor Deposition																
Laser-Shot Peen		X	X	X	X	X		X	X	X						
Mechanical Engraving	X	X	X	X	X	X	X	X	X	X	X		X		X	X
Silk Screen*								U								
Stencil-Chemical Coating								U								
Stencil-Ink*								U								
Stencil-Thermal Spray		X	X	X	X	X		X								
Paper Labels	U	U	U	U	U	U		U	X							U
Polymeric Labels				X	X	X		U	X	X	X					U
Metallic Tags, Bands and Nameplates								U	X	X	X					

Legend: X = Marking remains readable, R = Marking can be restored to readable status, U = Marking rendered unusable, Blank = Testing Not Completed  
 \*Clear coat required, \*\*Incorporated for comparison purposes





# Test Data Summary Sheet

## Example Test Data Summary Sheet

Material Type:

Material Strength or Hardness:

Coatings/Finishes:

Material Substrate:

Thickness:

Surface Roughness:

Surface Color:

Environmental Criteria & Test Points:

UID Mark Verifier Reading, Before & After:

Pedigree of Equipment Used to Mark & Verify:

ID Specs Used:

Special Processes Used:

Metallurgical or Material Effects (if any):

Add'l Info, Restrictions/Limitations & Notes:

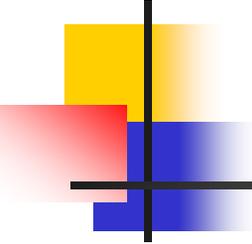
Org/Company Report Number:

Recommended: Yes or No

Point of Contact (Tester):

Phone Number:

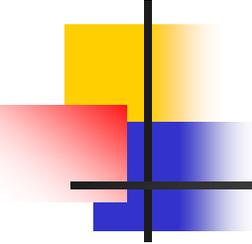
E-Mail:



# Summary

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- Assume Venture Could Save Supplier Base 1 Mark Qual Test Out of the 68 Standard Material Types NASA ID'd
  - Cost Avoidance Would be ~\$430M for DoD
  - Potential for More Savings if More Tests Avoided
- There is Synergy to be Had With NASA
- Time is Now! Realize Max Cost Avoidance
- Need Full DoD & Industry Assoc Backing



# What's Next?

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- Analyze NASA Qual Test Data (4 ft Stack)
  - Convert to Electrons & Host/Share via Web
- Merge NASA & Industry Matrices
- Review New Matrix for Untested Combo's
  - Assign Qual Testing to Industry/Gov't
- Establish Custodian for Test Data
- Establish Host Location for Virtual Doc
- Reconvene in Huntsville, AL → **Aug 2005**