

Part Marking Master's Perspective

[Machine Readable Identification (MRI) With Automated Data Capture]

-SMART Implementation-Journey to Optimization

Facilitated By: NDIA Industry Leadership Advisory Group (ILAG) February 2, 2006



Part Marking Master's Input

Honeywell – Torrance (Kelvin DeWinter) Honeywell – Toronto (Dan Cosman) Pratt & Whitney – Connecticut (Andy Jay) Progeny Systems – Connecticut (Ron Lounsbury) Rolls Royce – UK (Nat Russhard)

Leading The Way To MRI With Automated Data Capture!





Why MRI With Automated Data Capture? -Success Stories-

- ✓ 100% Reduction Quality Errors
- ✓ 100% Reduction Quality Escapes
- ✓ 100% Reduction Quality Notifications
- ✓ 90% Reduction Labor (cycle time)
- ✓ 50% Reduction Product Development Span Time



✓ Simple Rules ✓ Manage Implementation ✓ Advanced Planning ✓ Reduce Costs ✓ Transform!





✓ <u>Simple Rules</u>





SIMPLE RULES!

- ✓ LEAD transformation to MRI with automated data capture
- ✓ Identify "your pain" and <u>quantify</u> what transformation will mean to the organization in terms of internal and external benefits
 - Cost, schedule, standardization, confidence and quality improvements, compliancy
- ✓ Align transformation journey to customer(s) needs
 - IUID Compliance and Customer timelines used as a trigger (engagement) opportunity
- ✓ Estimate the cost of transformation
 - ♦ Infrastructure costs for Optimization vs. IUID compliancy
- ✓ Obtain and <u>maintain</u> High-level support
 - Commitment to transformation journey, resources and funding
 - Flow-down commitment and expectations to organization and suppliers



SIMPLE RULES!

- ✓ Begin transformation journey with pilots
 - Small "bounded" pilots 1 Product
 - Fully test MRI and automated data capture procedures
 - ♦ Fix root problems prior to next roll-out activity
 - Notify and engage suppliers during planning stage
 - To begin to transform their processes in order to provide MRI product and data elements as required
- ✓ Remain informed
 - Work with technology providers
 - Engage in industry and government working groups
 - Modify transformation journey as technology evolves and as common standards and policy requirements are more universally adopted & applied





✓ Simple Rules ✓ Manage Implementation





MANAGE IMPLEMENTATION!

- Manage implementation like a "Program"
 - ♦ Set measurable objectives and goals
 - Form a diverse team organization, customers, suppliers
 - Plan, estimate, schedule, execute, mitigate
 - Monitor performance and improvement metrics
- ✓ Formulate strategy and timelines based on
 - ♦ Compliance
 - Internal and external "Pain" (process improvements)
 - Evolutionary approach
 - Pilots
 - Trigger events to reduce cost impacts
 - Supplier input
 - Full optimization and institutionalization



MANAGE IMPLEMENTATION!

- Engage a diverse implementation team
 - Contracting, procurement/supplier management engineering, operations, information systems, sustainment organizations
 - Adjor Customers, DCMA, suppliers, sub-tiers
- ✓ Standardize and disseminate plan elements and expectations
 - Global policy regarding transformation (5-10 year plan)
 - Communication and training plans
 - Performance metrics
 - Harmonize configuration mgmt requirements with marking and data requirements
 - Manage supplier flow-down and costs
- ✓ Build energy and excitement regarding transformation
 - Engage
 - Communicate, communicate, communicate!



Simple Rules Manage Implementation Advanced Planning





ADVANCED PLANNING!

- ✓ Agree to MRI products/items listing
- Identify current state and capabilities
 - How items are marked...with what data elements (uses)
 - Technology utilized and types of equipment
 - Location of product/item "touch points"
 - Location of product/item "data capture touch points"
 - Information Systems potentially affected
 - Data elements, uses and current integration
 - WAWF and IUID Registry integration (process flows)
 - Supporting documentation
- ✓ Agree to data elements listing (integrated with use cases)
 - ♦ Internal value
 - Customer requirements
 - ♦ External value



ADVANCED PLANNING!

- Develop MRI with automated data capture future state processes and implementation activities
 - Standard procedures and work instructions for implementation
 - Accessible (electronic)
 - Common marking processes
 - Create marking requirements to integrate with current marking capabilities and change engineering specification upfront
 - Based on latest MIL-STD 130
 - Harmonize DoD and commercial requirements for single marking system

♦ Common data elements and information system data flow processes

- Eliminate non-value added "data capture touch points"
 - Future state includes <u>only</u> value added "data capture points"
- Define information system integration
 - What systems need to be modified
 - Automated downloads of data



ADVANCED PLANNING!

- Notify and engage suppliers to begin to transform their processes in order to provide MRI product and data elements as required
 - Disseminate an expectation notice to suppliers
 - Train and assist suppliers in their journey
- Develop supportive and continuing processes
 - Monitoring performance and metrics
 - ♦ Training

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✓ Simple Rules ✓ Manage Implementation ✓ Advanced Planning ✓ Reduce Costs





REDUCE COSTS!

- ✓ Drive automated reading of marks and data transfer to eliminate manual key stroking, manual quality errors and processing time throughout the entire lifecycle!
- ✓ Minimize legacy system changes...utilization suggestions
 - **♦** Keyboard wedge technology to feed legacy and new systems
 - Automate pull of import text files into legacy and new systems
 - Distribute numerical control system to store saved marking system instructions (patterns)
- ✓ Standardize marking formats
 - ♦ Suppliers benefit as well

REDUCE COSTS!

- Devise formal, documented training programs
 - Team members, marking and verification equipment operators, data capture operators, suppliers
 - Be creative....accomplish training via internet web meetings
- Provide continuing support to suppliers

NATIONAL DEFENSE INDUSTRIAL ASSOCIATION

Strength through Industry & Technology

- ♦ Standardize information to suppliers
- ♦ Brainstorm with suppliers how to
 - Reduce equipment and marking transformation costs
 - Eliminate errors prior to the "first mark"
 - Offer to review sample marks prior to production and/or require FAIR -First Article inspection Reports

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NOTIFICATION TO SUPPLIERS NUMBER 123 ISSUE 001 DATE XXX ORIGINATOR SUBJECT UID/Machine Readable FAIR Requirements for Suppliers The purpose of this letter is to inform you of FAIR (First Article Inspection Report) requirements in regards to direct part marking or machine-readable code requirements. If you supply to Company Name, the following will apply It will require a Company Name approval sheet A Company Name check sheet identifying level of required documentation AS9102 form 1 (Form 2 if required) Form 3, which shall include certification the equipment used, meets the requirements for marking this includes any special fixturing needed for holding the part The actual dimension of size for the machine readable data matrix and humar readable Measurement of the depth of marking A sample part for verification to our reader · Certification the part meets all requirements Compliance to the above is <u>mandatory</u> to satisfy our Quality requirements, and time to achieve a successful FAIR should be factored into the milestones for the plans that need to be submitted to me by DATE. You may feed back your questions to me directly by email or phone

Thank you for your attention in this matter.



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TRANSFORM! Benefits of MRI and Automated Data Capture

- Significantly reduces risk of quality failure associated with identification escapes
- ✓ Eliminates legibility issues
- ✓ An enabler to a paperless system
- ✓ Improves speed and accuracy of data transfer
- ✓ No data transcript errors
- ✓ Internationally recognized
- ✓ Has the ABILITY to......
 - ♦ Improve parts traceability
 - Reduce internal processing procedures
 - Capture accurate 'As Built' data
 - Check 'Should Build' data
 - Reduce Replenishment costs
 - ♦ Generate electronic log books







An MRI Journey - Sample



Technical Information -Lessons Learned-

Technical Information

- Eliminate UII construction errors which could cause costly labor hours to fix and schedule delays
 - **Oon't encode the UII data element string without a format code**
 - ♦Don't 'hard code' RS, GS, EOT
 - Must use their ASCII character representation in the syntax
 - Use the message header, group separators, record separator, and end of transmission in the syntax per ISO 15434
 - Oon't use the same enterprise identifier more than once in the message string
 - Use the appropriate data qualifier when encoding a concatenated UII or a DoD recognized IUID equivalent
 - Don't mix the use of Data Identifiers, Application Identifiers or Text Element Identifiers in the message
- Finding a UII construction or syntax error AFTER marking the part is too late!

http://www.acq.osd.mil/dpap/UID/attachments/Tip s%20on%20Constructing%20the%20UII.pdf

Technical Information

The DoD UID Construct is an accepted equivalent to the ATA Construct.

Technical Information

<u>Verification</u> – Evaluation of the marking quality of the 2D Data Matrix symbol for:

- Marking quality and part payment acceptance
- Arking process setup and control
- ♦ Prediction of marking durability
- ♦ Standards are still evolving
- ♦ Sampling plan
 - Defined by internal Mfg process procedures for the verifier
 - 5% of markings checked but could be larger based on batch size
- <u>Validation</u> 2D Data Matrix symbol has the appropriate syntax and semantics according to the last version of MIL-STD-130
 - ♦ Syntax shall comply with ISO 15434 → Unprintable ASCII characters complicate that
 - ♦ Semantics for AIs or DIs shall comply with ISO 15418
 - Semantics for TEIs shall comply with ATA Common Support Data Dictionary (CSDD)

IN SUMMARY...

- ✓ <u>Simple Rules</u>
- **√**<u>Manage</u> Implementation
- ✓ <u>A</u>dvanced Planning
- ✓ <u>R</u>educe Costs

✓<u>T</u>ransform!

and...continue to share Lessons Learned!