



HOW TO ACHIEVE SIGNIFICANT ROI THROUGH ADVANCED QUALITY MANAGEMENT PRACTICES

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Mike Miller – Founder & CEO, TIP Technologies



- ▶ 30+ Years of Quality Assurance and QMS Development Experience
 - Supplier Quality Management
 - QE / Manufacturing Support
 - Customer Quality Assurance
 - Quality Management

- ▶ Founded TIP Technologies, Inc. in 1989
 - Focus on QMS with integration to ERP
 - Focus on Aerospace and Defense

The Need for Advanced Quality Management

Why is Quality Critical?

- ▶ Compliance
- ▶ Failed Audits
- ▶ Cost of Poor Quality
 - Non value added appraisal
 - Scrap
 - Rework
 - Warranty / recalls
- ▶ Customer Satisfaction / Retention
- ▶ Life Safety



Defense Authorization Language

- ▶ The issue of electronic-based QMS is getting more and more attention from the US Congress. It has received little attention but buried in the recent Defense bill signed into law contains a provision that states:

Defense Authorization language. Sect 820:

“The conferees also encourage the Director, Defense Contract Audit Agency (DCAA) to examine the potential for electronic quality management systems to improve the ability of DCAA to conduct thorough and timely audits.”

The Benefits of an Electronic QMS

- ▶ Real-time Access to Quality & Manufacturing Data
- ▶ Control Over User Access
- ▶ Automate Critical Quality Processes
- ▶ Gain Visibility into Costs
- ▶ Effectively Collaborate with Suppliers
- ▶ Ensure Operational Excellence throughout Product Lifecycle



Downsides of not going electronic:

- Time consuming paper processes
- No integration with manufacturing data
- May not be utilizing best practices in quality



Control Access



Who can see?

Project Level Access
ITAR Control of Access



Who can do?

Skill/Training Management to
Enforce Product Operations and
Inspection and Test



Who can approve?

MRB Approvals
Device/Flight Line Buyoffs

Automate Tasks to Enforce Timeliness & Improve Records



- ▶ Choose a solution that can set automatic reminders
 - Document processing
 - Periodic Reviews
- ▶ Automatic Enforcement of Requirements
 - Such as Sample Plans, First Articles & Approval Authorities
- ▶ Validate all relevant information is entered into the system, and is retained on file

Manage Risk through Visibility and Complete Traceability at Every Stage of the Manufacturing Process

Genealogy/Configuration Management

- ▶ Enforcement of Requirements (*Serial Number, Lot Code, UID, etc.*)
- ▶ Ensure all issues are resolved before product release
 - All inspections completed
 - All Nonconformances resolved
 - All deviations approved
- ▶ Ability to rapidly identify suspect material for recalls



Meet Stringent Compliance Requirements within the Commercial Space Industry

Compliance Challenges Can Be Met with Ease

- ▶ Electronic Supplier Survey and Audit Scheduling process
- ▶ Compliance Audits including Closed Loop CAPA to Track all Findings
- ▶ Ensure compliance with ISO, MIL Standards
- ▶ Certified Operator Audits
- ▶ Safety Audits and Findings



Sampling of Standards:

- ISO 9001
- AS9100, AS9102, AS5553, AS6174
- FDA 21 CFR Part 11
- DoD Flow Down

Identify Supply Chain Risks and Learn to Improve Supplier Performance

Mitigate Risk Within the Supply Chain

- ▶ Understand the true cost of quality using key performance indicators
- ▶ Explore provider-related costs and data to hold poor performers accountable
- ▶ Ensure compliance and audit history by tracking regulatory requirements
- ▶ Proactively monitor suppliers based on performance trends
- ▶ Associate first-tier suppliers to their sub-tier suppliers for improved traceability
- ▶ Improve security with encrypted access to supplier data

Achieve Real-time Collaboration Throughout the Supply Chain



Rapid resolution of
Nonconformances

Rapid resolution of
CAPA's

Benefits of Effective Supplier Management

- ▶ Supplier Approval
- ▶ Supplier Performance Rating
- ▶ Electronic Delivery or Supplier Scorecards
- ▶ Closed Loop CAPA Process for Supplier Corrective Actions

Manage Your Supply Chain

Managing the supply chain through every tier is a critical step to mitigate the growing burden of risk. A standardized approach to managing supplier information allows you to map your supply chain and indicate primary and sub-tier supplier relations.



Supplier Quality Management:

- N-Tier Supplier Approval Status
- Supplier / Distributor Control
- Performance Metrics
- Part Certification / ASL Approved Supplier List

Easily Identify and Categorize Suppliers

Authorized Distributor

Franchised Distributor

Independent Distributor

Open Market

OCM/OEM

Continuous Improvement Techniques Lead to Higher Quality Products

Nonconformance / Electronic MRB Approval

- ▶ Split Dispositioning
- ▶ Multiple Defects per Document
- ▶ Traceability by Lot Code, Date Code, Heat Code, Serial Number
- ▶ Parent Child Relationships
- ▶ Root Cause Failure Analysis
- ▶ Task Planning

Electronic Receiving Inspection Process

- ▶ All Attribute and Variable data collection
- ▶ Inspection Instructions
- ▶ Electronic Vaulting of all Incoming Certifications and other required documentation
- ▶ First Article Requirements Notification and Electronic Vaulting of Supplier First Article Reports
- ▶ Tracking Tool and Gauges used on Specific Inspection Records
- ▶ Employee Skill Validation

Product Manufacturing Inspection, Test and Process Control



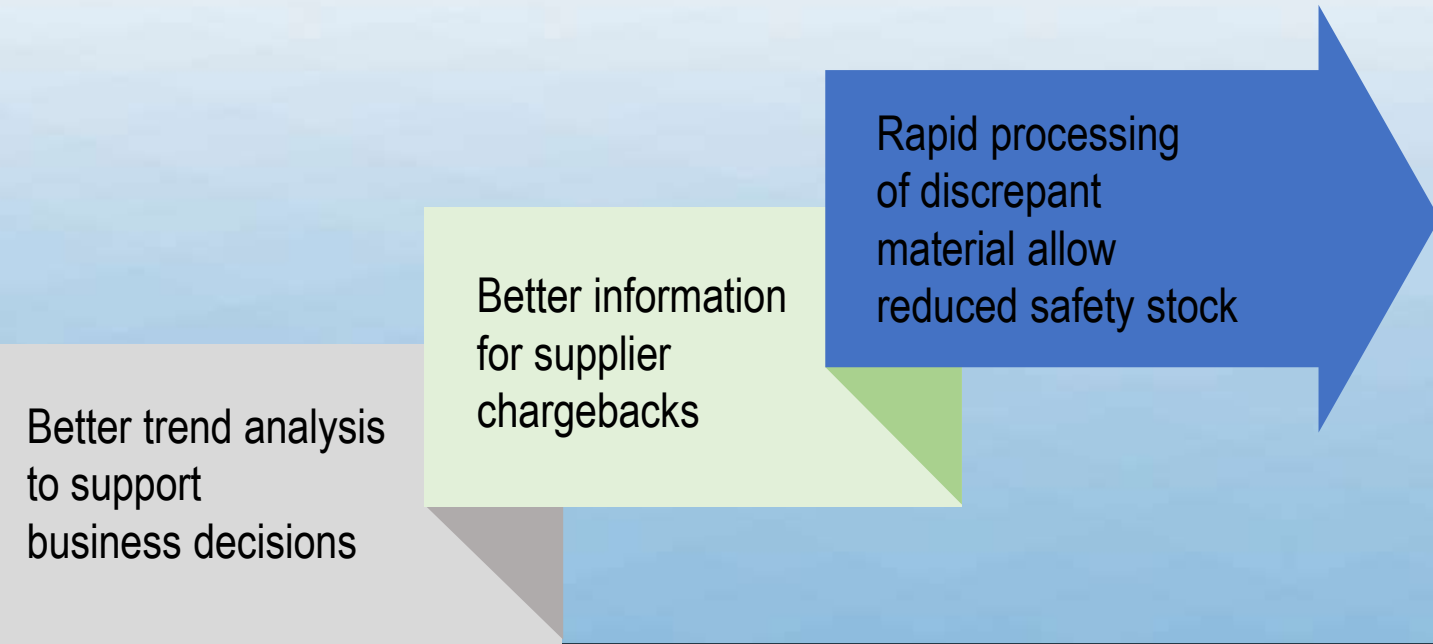
- ▶ Manufactured Product Inspection Instructions, Attribute Results and variable Data Collection
- ▶ First Pass Yield for all Critical Test Operations
- ▶ Electronic loading Variable Data Collection Attributes (Example: From DISCUS)
- ▶ Employee Skills Validation and Tracking
- ▶ Defect Collection

Product Manufacturing Inspection, Test and Process Control



- ▶ Closed Loop CAPA Process for Internal Corrective Actions
- ▶ First Pass Yield Data Collection and Reporting
- ▶ Configuration Management - As-built Data Collection
- ▶ Serial Number Assignment
- ▶ Release, Vaulting and Electronic Distribution of Quality, Manufacturing and Engineering Documents Supporting Operations

Practice Effective Cost Control



A Paperless Shop Floor Improves Efficiencies

Streamline Operations on the Shop Floor

- ▶ Seamlessly Integrate Shop Floor Data & Quality Data
- ▶ Reduce the Cost of Labor by Eliminating Redundant Processes
- ▶ Electronic Work Instruction Authoring
- ▶ Validate shop floor skills requirements such as FAA, FDA, AS9100, & EASA
- ▶ Provide a Comprehensive & Systematic Approach to drive quality throughout the organization - Create “a single view of the truth” in regards to Quality



Advanced Quality for the Space Industry

Competitive Advantage for the Space Industry

- ▶ Support Mission Assurance and Regulatory Compliance
- ▶ Minimize the Risk of Counterfeit Parts
- ▶ Modernize MRO Processes, Lower Expenditures and Compliance Risk
- ▶ Manage the Quality Lifecycle of Your Suppliers and Sub-tier Suppliers



Assessing Return on Investment

Impact on ROI

Directly Measurable ROI

- ▶ Reduced supplier management costs
- ▶ Increased vendor recovery success (“Game Changer” level of increase)
- ▶ Reduced defect management costs
- ▶ Reduced labor hours to maintain and improve quality operations
- ▶ Reduced IT support & costs

Impact on ROI

Soft ROI

- ▶ Ensures compliance & reduced risk throughout the product life cycle
- ▶ Visibility into overall operational performance for better decision making
- ▶ Improved confidence and quality of products shipped
- ▶ Complete traceability, track-ability, and genealogy of every part, subassembly, and final assemblyforever

What does TIP Technologies do?

- ▶ Provides solution to manage CAPA, NC, RI, Audit (TIPQA™)
 - Test for and capture defects throughout entire lifecycle for each component
 - Captures all artifacts to support capture of “As Built” versus ERP standard builds

- ▶ Provides solution to manage mission assurance (TIPSQM™)
 - PRIME - Tier 1 – Tier 2 – Tier 3 and their subs
 - Contractors and subcontractors (ERP systems do not track subs)

- ▶ Provides solution to support paperless manufacturing on shop floor (TIPSFE™)
 - Paperless execution, supported by EQMS to provide MES at reasonable investment
 - Seamlessly passes all data to TIPQA™ for reporting and audit control management



Thank You!

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