A Holistic View of Quality

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Gaining Control over Cost and Quality in Global Manufacturing

State-of-the-Art Approaches from Design to Sourcing to Production

From Data to Action

The Cost of Poor Quality

Designing for Reliability

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Agenda

- Who is Camstar?
- Global Electronics Supply Network Challenges
- Platform for Advancing Product Quality
- Case Studies
Camstar’s mission is to enable brand-owners, manufacturers and suppliers to produce the highest quality products through Global Supply Networks.

Company At A Glance
- Privately Held
- Founded 1984
- 225+ Employees

Offices
- USA: Charlotte NC, San Jose CA
- APAC: Singapore, Shanghai, Malaysia
- EMEA: Germany, Belgium, Ireland

Industries
- HighTech / Electronics
- Medical Device
- Semiconductor
- Solar
- A&D
- Industrial
- Biotechnology

Headquartered in Charlotte, North Carolina
Supply Chain Leaders Choose Camstar

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Supply chain issues are front page news

**Mattel fined $2.3 million over lead in toys**

"Toymaker Mattel Corp. agreed Friday to pay $2.3 million in civil penalties for violating a federal lead paint ban that resulted in the recall of millions of its Barbie, Dora and other popular-branded toys in 2007."

**Supply Data Now a Focus of Probe**

"Has the "channel check" become a criminal act? Wall Street analysts have been left bewitched in recent days, as federal prosecutors begin to home in on insider-trading cases that appear to involve routinely published information about public company supply chains…"

**Devastation Tsunami in Japan could affect economies worldwide**

"Already, the turmoil in Japan is affecting U.S. companies, investors and consumers, threatening disruptions in the flow of products and parts used to manufacture everything from Apple iPads to Sony televisions…"

**Sony recalls 1.6 million LCD TVs worldwide**

"TOKYO -- Sony Corp. says it is recalling 1.6 million LCD televisions globally because of a defect that can trigger overheating, smoke and melting parts."
The Reality of Supply Networks
Market Pressures on Global Supply Networks

- Increased Customer Expectations
- Increased Product Complexity
- Shorter Product Introduction Cycles
- Growing Global Demand and Competition
- Increased Global Supply Risk
Reality… A Fragmented Supply Network

- Lack of Multi-Tier Visibility
- Disconnected Product Information
- Fragmented Technology
- Rapid Change
- Antiquated Monitoring Methods
- Slow and Reactive Issue Detection

Excel & homegrown systems to obtain Multi-tier Supply Chain Visibility

Homegrown tools seldom include analytics that sift the millions of data elements to alert brand owners to exceptions.

Component Supplier Network → Contract Manufacturing Network → Final Assembly & Test Network
Where is my data?
“Aha” moments from mass data
Ex: Cost of Reactive Issue Detection

Prevention will Drive Down Cost: **Rule of 1-10-100-1000**

- **Prevention**
  - Component Supplier
  - Sub Assembly Supplier

- **Correction**
  - Final Inspection
  - Manufacturing

- **Failure**
  - Return/Warranty

Cost of Resolution

High (Costx1000)

Low (Cost)
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Camstar Platform for Advancing Product Quality

CORPORATE OPERATIONS, R&D, QUALITY

SUPPLY NETWORK COLLABORATION

PLAN • MANAGE EVENTS • MANAGE CAPA • CHANGE

SUPPLY NETWORK VISIBILITY

MONITOR • DETECT • NOTIFY • VALIDATE • DISCOVER

SUPPLY NETWORK

COMPONENT / SUPPLIER NETWORK

CONTRACT MFG NETWORK

MANUFACTURING SITES

REPAIR / RMA DEPOTS

MANUFACTURING EXECUTION

MODEL • ENFORCE • PREVENT • TRACK • TRACE

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What is Supply Chain Quality in the Cloud?

Supply Chain Quality
Visibility, Intelligence, Collaboration

External Supply Chain
(Suppliers, CMs)

Internal Supply Chain

After Market
(Service Centers)

GLOBAL MANUFACTURING SUPPLY NETWORKS
What is Supply Chain Quality in the Cloud?

Supply Chain Quality
Visibility, Intelligence, Collaboration

Automated Data Acquisition
- Manufacturing/Supplier Test Data
- Process Data
- Repair & Rework Data
- Incoming Quality Data

External Supply Chain
(Suppliers, CMs)

Internal Supply Chain

BRAND OWNER

Automated Data Acquisition
- Returned Material Data
- Warranty Data
- Service Data

After Market
(Service Centers)

GLOBAL MANUFACTURING SUPPLY NETWORKS
SigmaSure: Supply Network Multi-Tier Visibility

360 VIEW OF SUPPLY NETWORK

SUPPLIERS

MANUFACTURING

SERVICE / WARRANTY

SUPPLY NETWORK VISIBILITY

MONITOR • DETECT • NOTIFY • VALIDATE • DISCOVER

SUPPLY NETWORK

COMPONENT / SUPPLIER NETWORK

CONTRACT MFG NETWORK

MANUFACTURING SITES

REPAIR / RMA DEPOTS
Integrating the Supply Network: Supplier Product Quality Risk Management

Access to Manufacturing Genealogy information and Product / Process Parametric (test) data allows for:

- Better After-Market Product Performance Analysis
- Improved Quality Analytics
- Early Warning around Supplier / Manufacturing Issues
- Production Performance Analysis
- Better Root Cause Analysis around Product / Quality Issues
- Better Visibility into ECOs impact to Product / Process quality

HOW TO GET THE DATA?

Existing Landscape:

- No MES, Test Data
- No MES, Test Data
- No MES, Test Data
- No MES, Test Data
- No MES, Database
- CRM

Component Supplier Network

Contract MFG Network

Manufacturing Sites

Repair / RMA Depots
SigmaSure Functionality

1. Collect
   - FTP + DB
   - Database
   - Machine to System
   - Paperless Environment

2. Aggregate/Synchronize & Retain

3. Analyze/Discover & Predict

4. Alerts & Actions
   - !
Forward & Reverse Logistics

Components & Subassemblies

Final Integration

Field

Large percentage of issues come from Level 3 & below
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Challenge:
- Design in US. Suppliers & Mfg in China.
- Rapid time-to-market with quality
- Slow Manual Process Impedes RMA Analysis

Advantages
- Fast Deployment
- On-Demand Solution
- Flexible Partnership

Results
- High productivity & increased accuracy
- Rapid Root Cause Analysis
Value: Low-Cost, Predictable Supply Network

Value – Efficiency & Risk Mitigation
- Reduce COPQ (Supply, Manufacturing)
- Reduce COGQ
- Improved Demand Fulfillment

Solution – Sense & Respond
- Collect & contextualize supplier, CM, ODM, OEM, Tier N
- Detect, contain, diagnose and analyze quality issues
- Discover and predict quality, supply issues
- Collaborate with Supply Chain partners to correct
Global provider of broadband communications

- **Challenge:**
  - Stuck in “Excel Hell”

- **Requirement**
  - Wanted to analyze product return data, track trends & get to the root cause of issues with extensive drill down capabilities

- **Results**
  - Able to correlate RMA data with manufacturing test data which provides them with a closed loop view of our quality systems
Value: Reducing Warranty Exposure

Value - Return / Warranty Reduction

• Reduce Return Rates
• Reduce Warranty Reserves
• Reduce Service Inventory levels

Solution - End to End Visibility

• RMA/Warranty segmentation & analysis
• Connect to manufacturing, sourcing and genealogy data
• Root Cause Identification – Design, Supply, Manufacture

Design → Plan → Source → Manufacture → Return/Service
Challenge
- Needed visibility to 9 global factories for very high volume

Solution
- Real-time test and parametric data collection & analysis

Benefits
- Improved yield & reduced scrap
- Tied Mfg test data to repair/rework
- Reduced quality escapes on an annual basis by $1.5M
- Identified $$$ CM variance error
From: JOHN (CRITICAL VENDOR A)  
Sent: Monday,  
To: AI (BRAND OWNER)  
Subject: RE: OLP Trip Voltage Shift - XXXX

Hi AI,

Thank you for letting us know this. We **changed the vendor of the material** in this model that the same as previous Part Number since /18. Thank you for your feedback, and **we will change back to the original vendor**, we hope the Trip reading will get it back previous status. Thank you AI,

Best regards,
John

From: AI (BRAND OWNER)  
Sent: Sunday  
To: JOHN (CRITICAL VENDOR A)  
Subject: OLP Trip Voltage Shift – XXXX

Hi John,

**Starting /18, there was a sudden shift in the Trip voltage** on the xxx program, PN xxx-xxx. Did anything change on that date? Looking forward to seeing you and Bob on Thursday at Supplier X.

Best Regards,
AI
Value: Accelerate Product/Process Development

New Product Introduction
- Accelerate time to quality
- Reduce late ECOs
- Reduce early in-field failures

Solution – Learn & Improve
- Learn and leverage past platform
- Rapid change management & adaptation
- Early Prototype validation
Global provider of end-to-end enterprise communications

Brad Martin
Vice President of Eng Operations and Quality
Recap

- Real Time Data
  End to End Visibility

- Real Time Alerting
  Sense and Respond

- Granular Analytics
  and Drill Down

- Timeliness of Issue Detection

- Verification of Supplier Compliance

- Ineffective and Inefficient Data and Analytics
- In-depth Demonstration of SigmaSure
- Developing an ROI Analysis for Your Project
- Personalized 60 Day Pilot Project

GIVE US 60 DAYS AND WE WILL MAKE YOU A HERO
Visit www.camstar.com/hero to find out how
Questions?