QML Certification Versus TRUST

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Topics To Be Discussed

- Purpose

- Introduction

- Background

- Qualified manufacturers List (QML) Program
  - *QML Certification*
  - *Certification and Certification Maintenance*
  - *Participation in Audits*
  - *Conduct of DLA Audits*

- Defense MicroElectronics Activity (DMEA)

- TRUST
  - *How a Supplier Becomes TRUSTED*
  - *TRUSTED Supplier Accreditation Process*
  - *TRUSTED Integrated Supply Chain*
  - *How to Obtain TRUST*
  - *Differences Between QML and TRUST*

- Summary

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Purpose

- This presentation will provide the following:
  - *Basic understanding of what a QML certification is and how it is conducted*
  - *What the term "TRUST" means and encompasses*
  - *Differences between QML certification and a "TRUST" certification*
  - *Roles and responsibilities of DLA, other government agencies, suppliers and contractors in support of the QML and "TRUST" certifications*

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Introduction

- Defense Logistics Agency Land and Maritime (formerly Defense Supply Center Columbus) is the Qualifying Activity for the military specification and standards system

- DLA is responsible for evaluating, certifying, qualifying and monitoring the industrial supply base as part of the QML/QPL approach for electronic parts

- DLA performs these tasks through the following activities:

  - *Discussions with suppliers*

  - *Review of documentation (procedures, processes) and data*

  - *On-site audits of supplier's facilities*

- DLA utilizes other government agencies and consultants to provide support and technical expertise in their specific technology areas

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Background

- Defense Logistics Agency Land and Maritime was chartered with the responsibilities of being the Qualifying Activity for the military specification system

- Rome Air Development Center (RADC) was the government agency that provided the technical support to DLA in terms of requirements, test methods, understanding the physics and chemistry of the devices and audit monitoring

- During the early 1980s, RADC was disbanded and no other government agency assumed the role to technically support DLA

- Some of the military specifications specifically define the space community (SMC and NASA) as required approval authority in conjunction with DLA

- Over the years, issues have surfaced concerning audit conduct, requirements interpretation, generation of DARs, etc

- A Memorandum of Agreement was developed and agreed to by the Air Force, NASA and DLA defining the operating ground rules for audits and adjudication of issues

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Qualified Manufacturers List (QML) Program

- The intent of the QML program is to allow the device manufacturer the flexibility to implement best commercial practices to the maximum extent possible while still providing product that meets military and space performance needs.

- The specifications for the specific device commodities establishes the general performance requirements for the device and the quality and reliability assurance requirements, which are to be met for their acquisition.

- Detail requirements, specific characteristics of the device, and other provisions which are sensitive to the particular use intended will be specified in the device specification.

- Quality assurance requirements outlined are for all devices built on a manufacturing line which is controlled through a manufacturer's quality management (QM) program and has been certified and qualified by the Qualifying Activity (QA) in accordance with the requirements

- The manufacturer may present alternate methods of addressing the requirements contained in the specifications. These alternate methods will be approved by the Qualifying Activity.

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QML Certification

- Certification is the validation by the Qualifying Activity (DLA Land and Maritime), that the manufacturer has the capability of producing product which meets or exceeds the requirements contained in the specification.

- The manufacturers shall meet the minimum procedures and requirements for QML/QPL certification of a manufacturing line.

- The Qualifying Activity shall determine adequacy and compliance to the requirements and shall report their findings and recommendations in writing to the manufacturer.

- Qualification of a technology/product is performed after DLA provides certification approval.

- On-going certification maintenance is performed by DLA in the form of periodic audits and documentation/data reviews

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Certification and Certification Maintenance

- DLA selects the suppliers/facilities for audit based upon the following:
  - *Previous audit findings*
  - *Time since last audit*
  - *Issues defined by using organizations*
  - *Supplier requirements for certification, changes in technology or product, new quality levels, etc*
- Air Force and NASA review the DLA preliminary schedule of audits for determination of which audits should be supported
  - *Based on which suppliers are being used by the contractor base and experiences*
  - *Based on products produced*
  - *Based on prior history and knowledge of the supplier*
- DLA generates an agenda for the audit and sends to the supplier, Aerospace, NASA/JPL and the Air Force for comments
- Space community reviews the agenda and provides feedback to DLA

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Participation in Audits

- Space community participates in DLA space level audits
  - *Operates within DLA guidelines*
    - Provides knowledge of space user experiences without violating proprietary data rights
    - Provides technical expertise of process, technologies and overall space requirements
    - Provides actual space community data from contractor usage experience not available to DLA
    - Provides a common voice for space community concerns
    - Acts as the "Independent Broker" on behalf of the space users
    - Ability to gather first-hand experience of health of supply base
    - Identify areas of concern for improvement of specifications
  - *Reviews supplier procedures and processes*
  - *Technically questions supplier personnel and determines compliance and adequacy versus requirements*
  - *Generates Deficiency Audit Requests (DARs)*
  - *Reviews supplier corrective actions and recommends closure to DLA*
- Role of Other Government Agencies and Contractors in Audits
  - *Provides technical expertise of process and technologies such as radiation*
  - *Provides actual space community data from contractor usage experience not available to DLA*

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Conduct of DLA Audits

- The supplier presents an overview of his system to include the following as applicable:
  - *Design*
  - *Technologies*
  - *Quality*
  - *Reliability*
  - *Qualification*
  - *Quality Conformance Inspection*
  - *Configuration Management*
  - *Non-Conforming Material Control*
  - *Incoming Inspection*
  - *Testing*
  - *Calibration*
  - *Radiation*
  - *New Technology*
- The supplier may elect to only present changes or updates since the previous audit
- Questions and issues are openly discussed during the opening presentations

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Conduct of DLA Audits

- Based on the extensive nature of the commodity types and manpower/schedule constraints, the audit is intended to sample various areas of the suppliers system and not investigate/review each process or activity within the system

- DLA <u>only</u> audits the requirements of a specific class level (Space or non-space) and does not audit contractor specifications

- Validation of contractor specification requirements is the sole responsibility of the contractors

- DLA divides the audit team into sub-teams to allow a broader review of the system

- Each audit sub-team is tasked with evaluating how the supplier has implemented the requirements of the specification
  - *The compliance of the supplier to his documented procedures*
  - *Any areas of product deficiencies/non-conformances*
  - *Any reliability concerns*
  - *Discussing the deficiencies detected and documenting the deficiencies*
  - *Evaluating and determining whether a deficiency is a random or isolated issue or whether the deficiency is systemic*

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Conduct of DLA Audits

- The audit team may determine that other areas need to be reviewed based on the suppliers responses

- At the conclusion of the day, the audit team has a caucus to discuss their findings among themselves and then conducts a meeting with the supplier to explain the status of the audit and any findings

- At the conclusion of the audit, DLA and the team provide the supplier with an out-briefing explaining the results and any deficiencies detected and a categorization of each finding as major, minor or systemic

- DLA requires the supplier to respond to the audit deficiencies within 30 days and distributes the cause & corrective action to the specific auditor for acceptance

- DLA will not distribute the audit findings outside the participants

- Upon successful agreement of corrective action implementation, DLA grants the supplier approval of his facility/technology quality level

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Defense MicroElectronics Activity (DMEA)

- The organization within the Department of Defense with the unique mission to provide microelectronic components and assemblies for the Department's legacy systems.

- Reports to the Assistant Secretary of Defense for Research and Engineering.

- Program manager for the DoD Trusted Foundry program.

  – *The program provides a cost-effective means to assure the integrity and confidentiality of integrated circuits during design and manufacturing while providing the US Government with access to leading edge microelectronics technologies for both Trusted and non-sensitive applications.*

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TRUST

- **Definition of TRUST**

  "Trust is the confidence in one's ability to secure national security systems by assessing the integrity of the people and processes used to design, generate, manufacture, and distribute national security critical components"

- **Trusted Sources will:**

  Provide an assured "Chain of Custody" for both classified and unclassified ICs,

  Ensure that there will not be any reasonable threats related to disruption of supply,

  Prevent intentional or unintentional modification or tampering of the ICs,

  Protect the ICs from unauthorized attempts at reverse engineering, exposure of functionality or evaluation of their possible vulnerabilities.

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TRUST

- DoD Instruction 5200.44, [Protection of Mission Critical Functions to Achieve Trusted Systems and Networks (TSN)](#) requires that;

  "In applicable systems, integrated circuit-related products and services shall be procured from a trusted supplier accredited by the Defense Microelectronics Activity (DMEA) when they are custom-designed, custom-manufactured, or tailored for a specific DoD military end use (generally referred to as application-specific integrated circuits (ASICs))."

- DMEA accredits suppliers in the areas of integrated circuit design, aggregation, broker, mask manufacturing, foundry, post processing, packaging/assembly and test services.

- These services cover a broad range of technologies and is intended to support both new and legacy applications, both classified and unclassified.

- Additionally, the use of the Trusted Suppliers' Trusted Flow is adequate to protect Critical Program Information as required by DODI 5200.39, [Critical Program Information (CPI) Protection Within the Department of Defense.](#)

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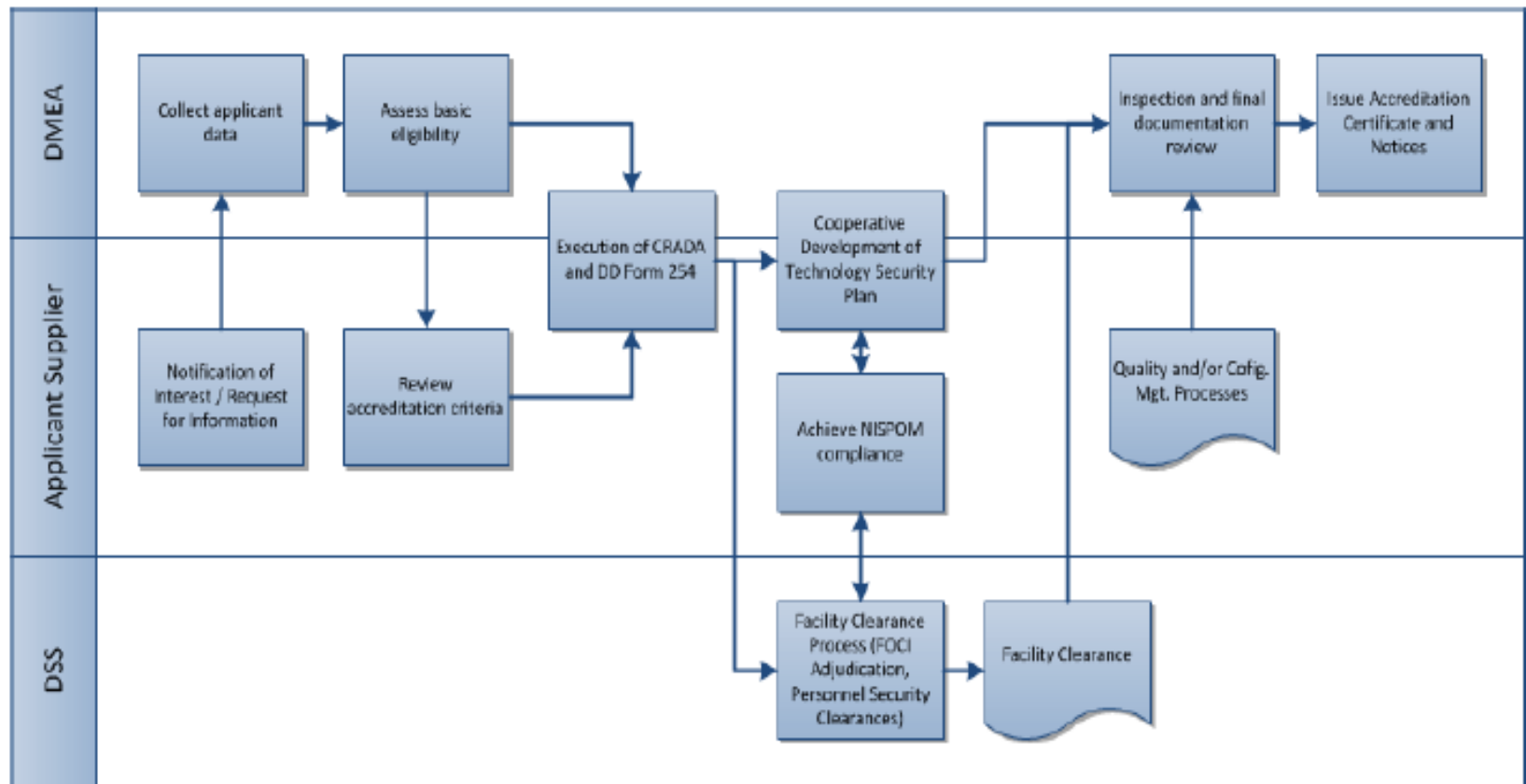
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How A Supplier Becomes TRUSTED

Candidate Supplier

Trusted Flow at Supplier

- ➤ Facility Clearance, FOCI adjudication/mitigation
- ➤ Cleared Chain of Custody
- ➤ Information System Security
- ➤ Configuration Management
- ➤ Quality
- ➤ Manufacturing Contingency Plan
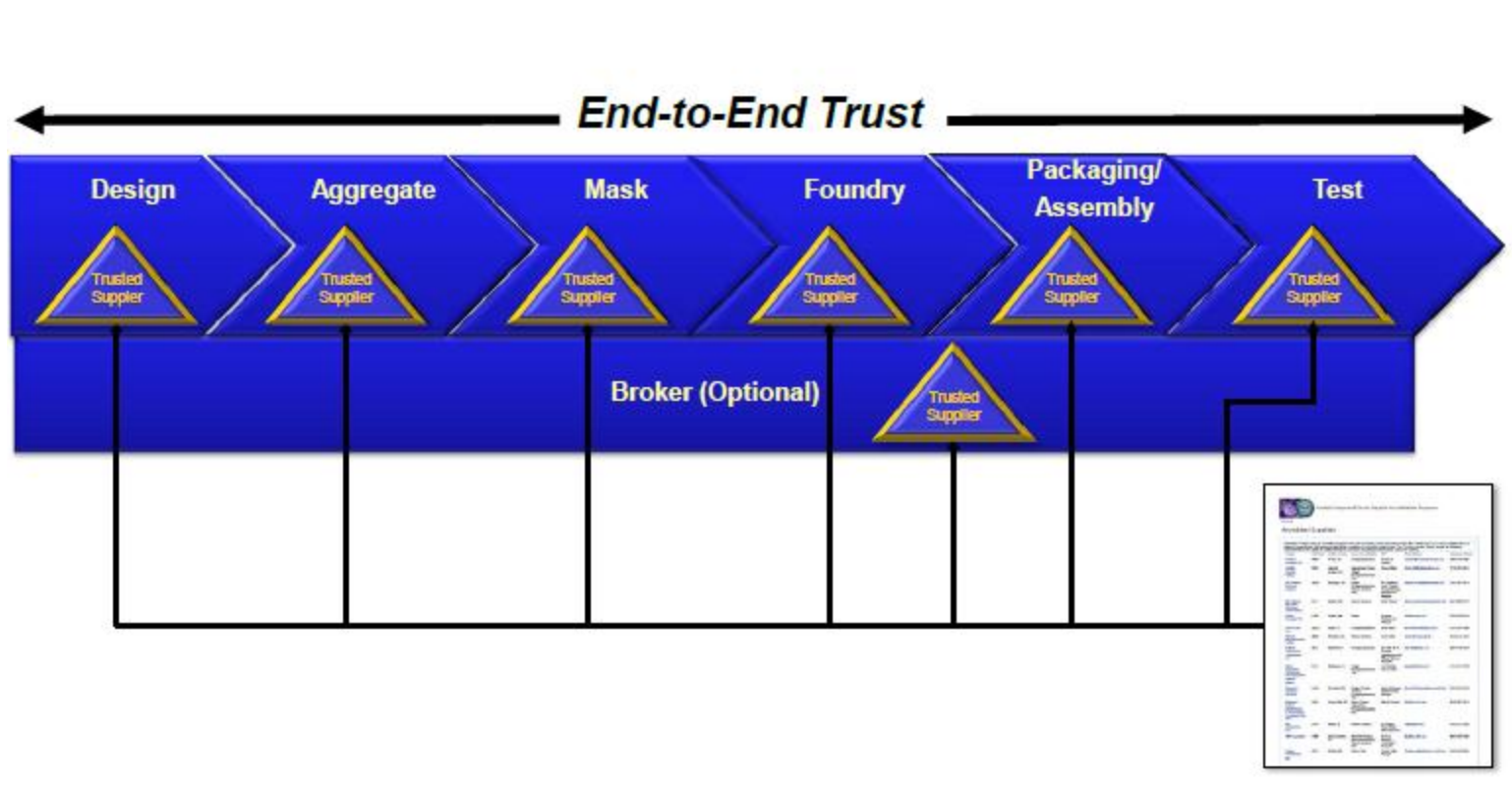- ➤ Scrap Controls

ACCREDITATION OF TRUST

Courtesy of DMEA

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TRUSTED Supplier Accreditation Process

Courtesy of DMEA

TRUSTED Integrated Circuit Supply Chain

Courtesy of DMEA

How To Obtain TRUST

- A TRUSTED service (just like ITAR) is an option
  - *Commercial (untrusted) services are also available at trusted suppliers*
  - *TRUSTED services are not automatic*

- Request TRUSTED services via the designated point of contact at each supplier (POCs are on the DMEA accredited supplier list)
  - *Ensures TRUSTED flow will be employed*
  - *Ensures confidentiality of customer information*

- TRUSTED services are required at each part of the supply chain

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Differences Between QML and TRUSTED

Characteristics	QML	TRUST
Technical Evaluation	Primary area of purview including quality & reliability	N/A
Security & Handling	N/A	Primary area of purview
Certification Audits	Performed by DLA, other govt agencies and SMEs	Performed by DMEA only
Supplier Involvement	All areas of supplier responsibilities including off-shore efforts	All areas related to security & handling of data/information, masks , designs and test

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QML and TRUSTED

- QML ≠ TRUST

  – *A supplier can be QML certified (i.e Texas Instruments) to produce microcircuits but not be TRUSTED*

  – *A QML approved supplier may or may not have the capabilities to be TRUSTED*

- TRUST ≠ QML

  – *A supplier can be TRUSTED (i.e. IBM) and not be QML approved*

  – *A TRUSTED supplier may or may not have the capabilities to be QML approved*

- Bottom Line

  – *Cannot equate QML and TRUST and need to understand the differences and evaluate usage based on your contractual requirements*

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Summary

- Presented an overview of the QML Program specifically concentrating on certification and validation

- Presented an overview of TRUST requirements and the approval process

- Identified the differences between QML and TRUST

- Bottom Line
  - *Cannot equate QML and TRUST and need to understand the differences and evaluate usage based on your contractual requirements*

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