Road Map  
Milestones for Success

Guide to Automotive Supplier Excellence

- Quality
- Corporate Responsibility
- Supply Chain
- Internal Auditor Certification
- Finished Vehicle Logistics
- Problem Solving
- Materials Management
- Quality Core Tools
- Auto ID/Labeling
- EDI
- Special Process Assessments
- Warranty Management
- Global Chemical Regulatory/Global Harmonized System (GHS)
- Environmental Sustainability/Greenhouse Gas
- Customs and Security
- Engineering Change Management
- IATF 16949:2016
- Conflict Minerals Reporting
- Sub-Tier Supplier Management
- Supply Chain Sustainability
- Layered Process Audits
- Packaging/Container Management
- Conflict Minerals Reporting
Featured Products: Quality

QUALITY CORE TOOLS
Launch products that consistently meet customer’s requirements.

• APQP: Advanced Product Quality Planning and Control Plan Reference Manual
• FMEA-4: Potential Failure Modes & Effects Analysis Reference Manual
• Related Self-Assessments, Classroom Training and eLearning
• SVPPAP-1: Service PPAP
• CQI-25 SPC Quick Start Guide
• CQI-26 SPC Short Run Supplement - Coming Soon
• MFMEA: FMEA for Tooling & Equipment (Machinery FMEA)

EFFECTIVE PROBLEM SOLVING
Identify root causes to eliminate underlying problems.

• CQI-20: Effective Problem Solving Practitioner Guideline
• CQI-21: Effective Problem Solving Leader Guideline
• Effective Problem Solving for Practitioners Training
• Taking Effective Corrective Action: Using the 8-D Approach Training

SUB-TIER SUPPLIER MANAGEMENT
Evaluate and manage sub-tier suppliers effectively.

• CQI-19: Sub-Tier Supplier Management Process Guideline (v1) manual
• CQI-19: Sub-Tier Supplier Management Process Guideline Self-Assessment, eLearning, and Classroom Training

INTERNAL AUDITOR CERTIFICATION
Ensure continuous improvement throughout your quality management system.

• Exemplar Global-Certified ISO9001 Internal Auditor Training with ISO/TS 16949 Automotive Emphasis
• Exemplar Global-Certified ISO9001 Lead Auditor Training with ISO/TS 16949 Supplier Auditor Certification

SPECIAL PROCESS ASSESSMENTS
Develop management systems for continual improvement, defect prevention and reduction of variation.

• CQI-11: Special Process: Plating System Assessment manual
• CQI-12: Special Process: Coating System Assessment manual
• CQI-15: Special Process: Welding System Assessment manual
• CQI-17: Special Process: Soldering System Assessment manual

IATF 16949:2016
Meet and satisfy your customers’ requirements.

• RULES-5: IATF 16949 Rules for Certification Scheme
• IATFG-2: IATF Auditor Guide for ISO/TS 16949

• IATF 16949:2016 Trainings:
  • Understanding IATF 16949:2016
  • Transitioning to IATF 16949:2016
  • Internal Quality Auditing
  • Supplier Auditor Certification

LAYERED PROCESS AUDITS
Improve Key Performance Indicators (KPIs).

• CQI-8: Layered Process Audits (v2) manual
• Implementing Layered Process Audits Training
• Leadership’s Role in a Successful Layered Process Audit (LPA) Training

IATF 16949:2016 Trainings:
  • Understanding IATF 16949:2016
  • Transitioning to IATF 16949:2016
  • Internal Quality Auditing
  • Supplier Auditor Certification
Featured Products: Corporate Responsibility

**CORPORATE RESPONSIBILITY**

**ENGINEERING CHANGE MANAGEMENT**
*Master the management of product and process changes between customers and suppliers.*
- CQI-24: Design Review Based on Failure Modes
- D-26: Engineering Change Management Reference Process
- D-29: Engineering Change Management (ECM) Recommendation
- D-30: ECM Recommendation - Engineering Change Request
- Introduction to Design Review Based on Failure Modes Training

**WARRANTY MANAGEMENT**
*Drive value through increased consumer satisfaction.*
- TC-5: Act Reporting Information Kit for TREAD Act Reporting
- THE-8: TREAD Act VMRS System & Assembly Code MAP

**SUPPLY CHAIN SUSTAINABILITY**
*Assess basic knowledge of fundamental business expectations.*
- Automotive Guiding Principles to Enhance Sustainability Performance in the Supply Chain
- Supply Chain Sustainability Knowledge Assessment (Practitioner)
- Supply Chain Sustainability eLearning
- Supply Chain Sustainability F2F Workshops —in country
- Supplier Sustainability Self-Assessment (Company)

**CONFLICT MINERALS REPORTING**
*Achieve compliance with legislation and/or customer requirements.*
- Conflict Minerals Microsite (English & Chinese)
- Conflict Minerals Reporting Checklist
- CM-3 Guide for Conflict Minerals Reporting to the Automotive Industry
- FAQs
- Cross Industry Collaboration
- GFSI Smelter Audits Project

**GLOBAL CHEMICAL REGULATORY / GLOBALLY HARMONIZED SYSTEM (GHS)**
*Attain compliance with global and regulatory mandates.*
- Regulations: Management and Compliance Webcast
- Global Product Regulation Overview Webcast
- Management of Product Chemical Regulatory Compliance Online Training
- On the Job with GHS eLearning Online Training
- CR-2: The ABC’s of GHS Compliant Safety Data Sheets & Labels

**ENVIRONMENTAL SUSTAINABILITY / GREENHOUSE GAS**
*Acquire energy efficiency and reduction strategies.*
- Quantify & Reporting GHG Emissions in the Auto Industry Webcast

**FEATURED PRODUCTS:**
- CQI-23: Special Process: Molding System Assessment manual
- Understanding the Heat Treat, Soldering, and Welding Special Process System Assessments Training
- Understanding the Plating and Coating Special Process System Assessments Training
- Understanding the Molding Special Process System Assessment Training
- Understanding the Casting Special Process System Assessment Training
- CQI-14: Automotive Warranty Management
- E-13: Warranty Claims Data Exchange
- CQI-14 Automotive Warranty Assessment Training
- Intro to Warranty
- Supplier Survey Analysis
- Supplier Communication Template
- Industry Call to Action
- IPCMP Training
- Industry Best Practices
- Stakeholder Outreach
- Industry Briefings
- TC-5: Act Reporting Information Kit for TREAD Act Reporting
- THE-8: TREAD Act VMRS System & Assembly Code MAP
- Supplier Survey Analysis
- Supplier Communication Template
- Industry Call to Action
- IPCMP Training
- Industry Best Practices
- Stakeholder Outreach
- Industry Briefings
- Introduction to Design Review Based on Failure Modes Training
Featured Products: Supply Chain

**EDI**
*Evolve from paper-based transactions.*
- E-2 EDI Project Planner
- EG-8 Implementation Guideline
- UN/EDIFACT Guidelines available online

**AUTO ID/LABELING**
*Eliminate human error from data.*
- B-21 Global Radio Frequency ID Item Level Standard
- B-9 Gas Cylinder ID Label Standard
- B-20 Automotive History of Data Identifiers
- B-4 Parts Identification and Tracking
- B-15 Standard Carrier Alpha Code Trailer ID Label
- B-10 Trading Partners Implementation Guideline & eLearning
- B-16 Global Transport Label & eLearning
- B-8 Quality Assurance Guidelines for Shipping Labels
- B-2 VIN Label Application Standard

**MATERIALS MANAGEMENT**
*Organize the supply chain productively.*
- M-17 Global Materials Management Logistics Agreement (GMMLA)
- M7-4 Global MMOG/LE
- M-8 KPI for GMM
- M-13 Global Receiving Advice
- M-6 Optimum Shipping and Receiving Systems
- M-20 Recommended Business Practices for Long Distance
- M-12 Business Continuity Planning for the Automotive Supply Chain
- MMOG/LE Implementation Training & eLearning
- Executive Seminar: Auto Industry Global Purchasing and Supply Chain Management
- Auto Industry Certificate in Purchasing & Supply Chain Management

**FINISHED VEHICLE LOGISTICS**
*Deliver to dealers more efficiently.*
- E-21 EPOD Electronic Proof of Delivery Standard
- M-21 Visibility Definitions
- M-22 Damage Claims
- M-23 Quality Handling Manual
- DMG-1 Global Vehicle Damage Codes

**CUSTOMS AND SECURITY**
*Import/Export goods effectively.*
- TC-1 Information Kit for Importing into the US
- TC-2 Information Kit for Importing to Canada
- TC-3 Information Kit for Importing to Mexico
- TC-7 Basics of Export Compliance
- Supply Safe: C-TPAT Compliance
- NAFTA Content Reporting Training

**PACKAGING / CONTAINER MANAGEMENT**
*Reduce part damage/contamination.*
- RC-5 Returnable Containers Management Guideline
- RC-9 Returnable Containers Performance Test Guideline
- RC-17 Returnable Transport Items Visibility Best Practices
- RC-3 Returnable Wheel Packs Transported by Truck

For more information on the Roadmap, please visit [http://go.aiag.org/milestones-supplier-success](http://go.aiag.org/milestones-supplier-success)
INTRODUCTION

Why do automotive suppliers need a road map to supplier excellence? Because achieving specific milestones in the areas of Quality, Supply Chain, and Corporate Responsibility is key to not only winning automotive business but also establishing the strategic core competencies that help companies operate most competitively.

The AIAG Road Map to Automotive Supplier Excellence is your guide along the journey to becoming a world-class automotive supplier. Quite simply, the Road Map reflects what a company needs to know to do business in the automotive sector. While some of the milestones are best practices, others are strongly recommended or even required by the OEMs themselves. Therefore, veering off this proven path to supplier excellence could mean the road will be bumpier than it needs to be.

AIAG invites you to use this Road Map to Automotive Supplier Excellence to benchmark your business development plan and get up to speed on the helpful tools available through AIAG.

QUALITY MILESTONES

AIAG has a broad portfolio of quality products, services, and events created by industry volunteers and available to all. The quality products featured on the Road Map are a prioritized sequence of essential systems, methods, and tools for suppliers to develop on their journey of continuous quality on the road to automotive supplier excellence.

The Core Tools are first — aptly named because they are core to designing, building, and delivering quality products to the customer. AIAG offers the five Core Tool documents (PPAP, APQP, FMEA, MSA, and SPC), a free online self-assessment to determine your knowledge level, and e-learning and classroom training courses (overview, implementation, and certification levels) to support any organization.

Layered Process Audits are an excellent fundamental support tool for a manufacturing area. LPAs assess the discipline of an organization to follow the defined manufacturing process and controls. AIAG offers the guiding document and two training courses.

Of course, between product development, process development, and industrialization of new products and processes, quality issues will occur. Problem solving is a critical skill to rapidly address these issues. Two guidelines are available — one for practitioners and one for leaders — complemented by two classroom training courses. On-site training is a popular option and is available for most AIAG content, allowing for multiple personnel to train as a team using real-life issues.

Sub-tier supplier management is the next priority. A plant’s outgoing quality is only as good as the quality of its purchasing products. The Sub-Tier Supplier Management Process Guideline describes best practices for a tier 1 supplier in evaluating, selecting, and developing their sub-tier suppliers. AIAG offers the guideline, as well as a blended learning-training offering, including an online self-assessment, e-learning, and classroom training.

At this point, companies should focus on quality system development by pursuing formal certification of their quality management system. This reaches into other organizations and tests the linkages between functional processes to assure overall success. AIAG provides the IATF 16949:2016 standard and certification rules, as well as guidance documents for transitioning to the automotive standard. AIAG also offers information on how to audit a company’s enhanced system using the recommended process approach. Several training courses, including supplier auditor certification and recertification, are available.
A critical requirement that supports quality system development and certification is having skilled and qualified internal auditors. AIAG offers training for suppliers’ internal auditors as well as certification for the lead auditors of a certification body.

If applicable to a company’s products, special process assessments are essential to assure the ongoing quality performance of these critical manufacturing processes. AIAG currently offers seven different special process assessment guidelines such as the heat treat, plating, and coating system assessments, and four training courses to support deployment, maintenance, and improvement of the controls for special processes.

At this stage on the Road Map, many of the quality fundamentals are in place, effective, and certified. The next item on your continuous improvement journey is engineering change management. Many consider change management to be a difficult and laborious process. To make it more effective and efficient, it is essential to view ECM as a cross-functional business process rather than the sole responsibility of the product engineering organization. In this area, AIAG offers four guidelines and one classroom training course.

Finally, depending on the type of product a company manufactures and its position in the supply chain, management of field issues could be a critical organizational challenge. AIAG offers guidelines that explain the TREAD Act, a guideline for warranty management, and three warranty training courses, including a course that supports implementation of a warranty management system, and an advanced course for warranty issue troubleshooting.

AIAG’s recommendation when following this Road Map for implementation of quality systems is adjusted by responsible, experienced quality professionals based on the results of a thorough, on-site assessment of the plant needing development. The quality milestones along the AIAG Road Map to Supplier Excellence — coupled with an on-site assessment and frank, open management review with an organization’s leadership — is the starting point for successful transformation of a company’s quality systems, methods, and tools.

CORPORATE RESPONSIBILITY MILESTONES

AIAG’s diverse corporate responsibility portfolio was created to meet the needs of the automotive industry’s complex supply chain. Inspired by a common approach and message AIAG’s CR team and industry volunteers created a set of guiding principles to clearly describe the minimum expectations toward business ethics, working conditions, human rights, and environmental sustainability — for suppliers as well as their subcontractors and suppliers. The industry expects suppliers to implement these guidelines and cascade them down their supply chain.

The first CR milestone on the Road Map to Automotive Supplier Excellence is a thorough review of the Automotive Industry Guiding Principles to Enhance Sustainability Performance in the Supply Chain listed under Supply Chain Sustainability. These principles, supported by sponsoring global auto manufacturers, are based on fundamental principles of social and environmental responsibility that are compliant with local law and consistent with international expectations. Note that while individual manufacturers may have their own standards, codes, and policies, these Guiding Principles represent the minimum expectations of OEMs globally.

AIAG has developed online supply chain sustainability tools to support suppliers globally and assist with implementation of these guidelines. The AIAG Supply Chain Sustainability eLearning is a free online course that highlights fundamental principles of responsible working conditions and OEM expectations. The AIAG Supply Chain Sustainability Knowledge Assessment (Practitioner Level) helps onboarding employees who have been assigned to lead or champion their company’s sustainability efforts get familiar with terms and knowledge common to the automotive industry.
Supply Chain Sustainability Workshops are in-person workshops scheduled throughout the world that highlights the fundamental principles of responsible working conditions and OEM expectations. Supplier Sustainability Self-Assessment (Enterprise Level) is a standardized tool for gap analysis and process improvement. It provides a method by which suppliers can report on their sustainability activities with a single response delivered to multiple customers.

Responsible business practices are driven by either a company’s effort to be more sustainable and efficient, to meet customer requirements, or to comply with regulations and mandates. Today, companies face a growing number of regulations in the U.S., Europe, and Asia that affect business operations globally. U.S. law requires publically-traded companies to disclose annually whether their products contain certain minerals and if they originated from mines operated by armed insurgents in and around the Democratic Republic of Congo (DRC) and the surrounding countries. The law seeks to end armed conflict in Central Africa, which is partially financed by the mining and trading of minerals by requiring conflict minerals reporting.

Understanding the origin of conflict minerals in your products is the key to successfully complying with governmental and customer requirements. Companies supported by industry associations, such as AIAG, have found it easier to comply with conflict minerals regulations because they are able to collaborate with their peers. Furthermore, due to its global reach and endorsement of industry leading tools, AIAG enables companies to comply with customer requirements as well.

AIAG offers specific trainings and annual events that address conflict minerals reporting. Online resources include a Conflict Minerals microsite in English and Chinese, conflict minerals reporting checklist, a case study, and a Guide for Conflict Minerals Reporting to the Automotive Industry.

Understanding the proper use and management of chemicals in the production process is the next stop along the Road Map, an area in which automotive industry and its supply chain face a plethora of governmental regulations. AIAG keeps the industry abreast of existing and emerging regulations and provides an assessment of their impact. AIAG also joins with other industrial groups to develop common processes and tools that increase the efficiency of regulatory compliance.

AIAG’s global chemical regulatory activities define the global impact of emerging chemical management or regulations on the automotive industry. This is accomplished by supporting the development and operation of chemical reporting processes to meet both regulatory and customer requirements, and by interacting with other automotive associations on regulatory, customer, and reporting requirements. The Road Map features webcasts and online training.

Additionally, automotive manufacturers and suppliers seek competitive benchmarking to improve the environmental efficiency and performance of their organizations and provide the transparency demanded by today’s consumer markets. However, there is very limited specific information available on environmental performance metrics such as waste generated, waste sent to landfill, energy, greenhouse gas (GHG) emissions, and water use. This is largely due to the lack of common definitions for environmental sustainability, which can vary between industries, between continents, and within an industry. AIAG and its volunteers are working to develop robust, standardized industry performance metrics and facilitate their widespread use throughout the industry supply chain. One outcome of this work is an AIAG webcast that helps companies understand how to quantify and report GHG emissions.

AIAG is facilitating a common industry approach among members to prepare the automotive industry to incorporate environmental sustainability throughout the supply chain — whether through the development of common tools for reporting and data collection, or by taking a more comprehensive approach to addressing sustainability at an organizational level.
The CR milestones on AIAG’s Road Map to Automotive Supplier Excellence are supported by the ongoing development of important events, training, guidelines, and tools to address water and other environmental sustainability issues.

**SUPPLY CHAIN MILESTONES**

AIAG offers a variety of tools that make a positive impact on your supply chain, including products and training in materials management, logistics, and e-commerce. The supply chain products featured on the Road Map appear in the logical order for suppliers seeking to develop a dependable and efficient supply chain on the road to automotive supplier excellence.

Business process stops on the Road Map for your supply chain are:

- **Electronic data interchange** – EDI is the industry standard for the electronic messaging of business documents that support manufacturing processes. The automotive operating environment employs automation to constantly update information relative to the flow of materials and other data. EDI facilitates a common format for the exchange of information without human intervention. AIAG offers an EDI project planner and two implementation guidelines online.

Next along the Road Map to supply chain efficiency is.

- **Auto ID/labeling** – Given the breadth and complexity of the auto industry, the challenge to supply and move any commodity without the use of physical labels is unmanageable. Part labels, inventory labels, quality audit labels, bills of materials, shipping labels, etc. are crucial to identify the commodity and its destination. In today’s automatic identification-based, data-gathering environment, critical business processes literally cease without this information.

For many years, these labels were paper-based; however, RFID is entering mainstream use throughout the industry. The ability to automatically identify, route, process orders, and ship is a critical part of the industry’s ongoing business success.

AIAG has been a major force in developing standards that define and encourage the use of auto ID technology, from laser line scanners and linear bar codes 25 years ago to 2D symbologies and RFID tags today. AIAG has several standards and guidelines available for download as well as two e-learnings in this area.

- **Materials Management** – Once parts are automatically identifiable, the supplier can organize its supply chain by looking at materials management on a more comprehensive scale. Unlike other traditional production-related businesses, the automotive industry has numerous material requirements. The complexity of material flow warrants an orchestrated effort to meet timely parts delivery to an assembly site. With OEM input, AIAG has designed comprehensive training modules, classroom, and e-learning to prepare prospective suppliers with the necessary information and process requirements to conduct business with automotive companies.

- **Packaging and container management** has evolved into a new business specifically designed to facilitate production, increase demand for damage-free parts, and limit dunnage. In addition to the ease of on/off loading in transit from the supplier to an assembly site, this is achieved through customizable returnable containers.

AIAG has a number of guidelines, standards, and tools that reduce part damage and contamination, to
manage your pallets, cartons, and returnable containers.

- **Finished Vehicle Logistics** – After vehicle production, the Supply Chain focus shifts to finished vehicle distribution. This is the process of distributing finished vehicles damage-free to their ultimate destinations around the globe. Specialized equipment for handling via truck, rail, and ocean carriers as well as personnel training are the important components of the vehicle delivery process. Various after-plant functions may occur and are facilitated as an integral part of an FVL delivery process. Finished vehicle delivery networks are designed and engineered to minimize transit time, along with other performance objectives, and are crucial components of a cost-effective inventory management system.

- **Customs and Security** – At this point in the Road Map to Automotive Supplier Excellence, your company may have requirements to operate in an environment of extended supply chains. In today’s automotive production environment, there is an inordinate level of complexity with cross-border parts supply, customs clearance, export compliance, and supplier-park coordination with final assembly locations.

  The U.S. Customs and Border Protection agency introduced a voluntary pre-clearance security program titled Customs-Trade Partnership Against Terrorism (C-TPAT). C-TPAT consist of several auditable program prerequisites involving critical elements to securing facilities and equipment to facilitate cross-border expediting of automotive parts and finished vehicles.

  AIAG has harnessed these critical elements into an electronic portal as a subscription service titled Supply Safe. This voluntary program addresses pre-clearance while expediting shipments through customs and meeting government requirements necessary to secure our borders.

  AIAG also offers three information kits to guide automotive companies through the process of importing product and vehicles into the U.S., Mexico, and Canada, in addition to training for NAFTA content reporting and C-TPAT compliance. Members of the C-TPAT program also qualify for extended privileges by similar programs in select countries via mutual recognition. Mutual Recognition Arrangements (MRA) are bilateral understandings between two Customs Administrations.

The supply chain milestones along the *AIAG Road Map to Automotive Supplier Excellence* represent the checkpoints to achieving greater supply chain effectiveness and efficiencies. These milestones — and the corresponding AIAG assessments, tools, guidelines, and training — are the starting point for the successful transformation of a company’s quality systems, methods, and tools.
KEY TAKEAWAYS

It is an exciting time to be in the automotive business, but the competitive and regulatory environments make it imperative that companies get connected to information sources and networks of support that will keep them abreast of the challenges and opportunities, and most importantly, the solutions. As evidenced by the training, tools, and guidelines on the AIAG Road Map to Automotive Supplier Excellence — which encompass the three focus areas of quality, supply chain, and corporate responsibility — AIAG has the insight and expertise to deliver the results you need to be a respected and successful player in the automotive industry.

Your path along the Road Map to Automotive Supplier Excellence is made smoother because AIAG:

- **Provides unique insight** by uncovering and addressing industry pain points;
- **Champions expertise** by seeking out the industry experts needed to collaborate on solving the challenges; and
- **Captures and shares the results** through publications, training, and events.

A great first step is to take advantage of the various self-assessments offered by AIAG to benchmark where you may need more training or tools. Whether a seasoned automotive player or a company new to the industry, we encourage you to use this Road Map to assess your competitiveness and achieve the milestones necessary to reach supplier excellence in the automotive industry.