

PROYECTO FIN DE MÁSTER



MOVILIZACIÓN DE PROCESOS DE CALIDAD EN PROYECTOS DE MANTENIMIENTO FERROVIARIO

ELABORADO POR:

JORGE FERNÁNDEZ
SONIA FRANCISCO
NURIA IGLESIAS

TUTORES:

ESTHER TOLEDO
BEGOÑA RAMOS

MASTER EN GESTION DE CALIDAD Y EXCELENCIA EMPRESARIAL
ESCUELA DE ORGANIZACION INDUSTRIAL EOI
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ANEXO I. DIAGRAMAS DE FLUJO

1. SITUACIÓN ACTUAL

ALSTOM, líder mundial en infraestructuras de energía (equipos para la generación y transmisión de energía) y transporte ferroviario. La Compañía participa en el sector de la energía a través de sus actividades de generación y en el sector del transporte a través de sus actividades ferroviarias.

Es una empresa enfocada en el ciclo completo de vida de los productos; éste no termina con la fabricación, Alstom consigue integrar aspectos relacionados con el mantenimiento y la renovación para alimentar su proceso de I+D y revertirlo en la fabricación. Adicionalmente son un referente en tecnologías innovadoras y respetuosas con el medio ambiente.

Centrada en el liderazgo, busca la satisfacción del cliente mediante una ejecución eficaz de los proyectos y servicio. Sus valores son:

- ✓ TRUST
- ✓ TEAM
- ✓ ACTION



Presencia- Ingresos- Plantilla

El volumen de venta anual del grupo ascendió, en el ejercicio 2011/2012, a veinte mil millones de euros, tiene presencia en 100 países y emplea a 92.800 personas a nivel mundial. Sus líneas de negocio son energías térmicas principalmente (42%), transporte (28%), energías renovables (10%) y redes inteligentes para la transmisión de la energía -Grid- (20%).

Número 1 en trenes de alta y muy alta velocidad en todo el mundo y ocupa el segundo lugar en el mercado del transporte urbano, trenes regionales, señalización, equipos de infraestructuras y todos los servicios asociados.

En España, Alstom da empleo a cerca de 4.000 personas, distribuidas en más de 30 centros de trabajo. La compañía cuenta con 6 fábricas repartidas por toda la geografía española y dedicadas tanto al mercado nacional como al de exportación. Adicionalmente, cuenta con el centro de I+D de referencia mundial en energía eólica y 7 centros de desarrollo tecnológico para el resto de su cartera de productos y servicios.

En España, sus líneas de negocio son: energías renovables (40%), transporte (49%), energías térmicas (6%) y redes inteligentes -Grid- (5%).

1.1 TRANSPORTE

ALSTOM posee una visión innovadora del transporte ferroviario. La actividad de ALSTOM Transporte incluye diversas líneas de producto:

➤ **Fabricación de material rodante - Diseño, ingeniería y fabricación de todo tipo de material rodante ferroviario:**

Trenes Eléctricos, Diesel-Eléctricos, Diesel-Hidráulicos, de uno y dos pisos, Automotores, Unidades de Tren para grandes pendientes, Regionales, Intercitys y Cercanías, Tranvías y Metros, Coches de pasajeros, Trenes de Alta Velocidad, Trenes Pendulares.



Figura nº1. Material rodante

➤ **Señalización ferroviaria y telecomunicaciones:**

Enclavamientos electrónicos de seguridad, Enclavamientos eléctricos de cableado libre y de módulos geográficos. Sistemas de ATO y ATP para Metros y ERTMS para ferrocarriles. Sistemas de señalización y seguimiento para tranvías. Sistemas de telemando, CTC y Train Management Systems (TMS).

Señales ferroviarias, convencionales y de fibra óptica. Accionamientos eléctricos de agujas. Accionamientos electrohidráulicos de agujas para cambios de alta velocidad. Circuitos de vía de audio frecuencia, de impulsos y convencionales de 50 Hz. Equipos para protección de pasos a nivel.

Telecomunicaciones para servicios ferroviarios. Telefonía móvil GSM-R. Sistema automático de identificación de vehículos. (AVI)



Figura nº2. Señalización ferroviaria

- **Mantenimiento, rehabilitación y modernización** de todo tipo de material rodante ferroviario. Locomotoras: Eléctricas y Diesel, Unidades de Tren, Metros, Coches, Talleres. Gestión y venta de Repuestos. Cursos de Formación técnica. Elaboración de Documentación técnica.



Figura nº3. Interior de Metro

- **Sistemas de transporte llave en mano e infraestructuras ferroviarias.** Sistemas de transporte llave en mano e Infraestructuras ferroviarias: Subestaciones, Líneas aéreas de contacto para trazados convencionales y de Alta Velocidad, mandos centralizados, sistemas de comunicación, instalaciones fijas de estaciones, escaleras mecánicas, etc.



Figura nº4. Subestación eléctrica

1.1.1 TRANSPORT - TRAIN LIFE SERVICES. Actividades principales de TLS en España

El objeto del negocio de TLS es prestar un conjunto de servicios en las áreas abajo descritas, que permiten a los operadores (nuestros clientes directos) optimizar las prestaciones y coste del ciclo de vida de sus flotas (locomotoras, trenes de pasajeros, metros y tranvías) con las que, a su vez, ellos prestan servicio a sus clientes.

Las áreas en las que se estructura el negocio son las siguientes:

- Mantenimiento integral de material rodante. Preventivo, Correctivo y Predictivo y de instalaciones.
- Garantías
- Rehabilitación, renovación y modernización de vehículos
- Documentación y asistencia técnica (formación, transferencia de tecnología, sistemas y herramientas de gestión de mantenimiento, soporte técnico, etc)
- Gestión y venta de repuestos

2. ANÁLISIS DE SITUACIÓN DE PARTIDA

Alstom tiene un SGC definido a nivel global en el que existen procedimientos generales que se tienen que aplicar a las distintas líneas de producto. Estos procedimientos generales incluyen:

- Cómo Alstom responde a los requisitos de la ISO 9001:2008.
- Cómo Alstom responde a requisitos estándares propios que considera importantes y que se deben cumplir.

Además, cada línea de producto establece a su vez:

- Procedimientos más específicos de TLS que detallan procesos concretos de las actividades más características de la línea de producto correspondiente.
- Estándares aplicables a la línea de producto específica

Todos estos procedimientos (generales, específicos y estándares) forman un SGC que en Alstom TLS se llama **Franquicia**.

El sistema Franquicia, como cualquier otro método, presenta unos beneficios y unos problemas que a continuación se detallan.

Beneficios de franquicia:

- ✚ Misma forma de trabajar en todos los Proyectos de Mantenimiento
- ✚ Mismo nivel de Calidad para cualquier cliente del mundo.
- ✚ Basada en “Mejores Prácticas” y el “Know-how” de Alstom a nivel global.
- ✚ Procesos predefinidos que ayudan a una implantación más rápida del sistema de gestión de un Proyecto. Esto es especialmente relevante en países emergentes donde Alstom no dispone de una estructura muy madura.

Problemas de franquicia:

- ❖ Al ser un sistema general aplicable a todo mantenimiento, hay ocasiones en que los procesos y procedimientos son muy generales, sin detalle de cómo se ejecuta cada proceso para poder implantarlo correctamente, y no queda claro cómo llevarlos a cabo en el día a día.
- ❖ Procesos o procedimientos basados en estructura general o global de Alstom que no siempre se refleja igual en todos los proyectos y que presentan problemas de interfaces al no explicar cuál es la relación entre los distintos departamentos.
- ❖ Falta de un método ágil para actualizar los procesos o procedimientos conforme a nuevas herramientas, nuevas formas de trabajar, etc.

3. ÁREA DEL PROYECTO

Este proyecto se ha desarrollado a solicitud del departamento de Calidad y Medio Ambiente de Alstom Transporte España y va dirigido al mantenimiento de material rodante de TLS.

TUTORES: Esther Toledo: Directora Calidad TLS

Begoña Ramos: Directora Calidad Norte África y Oriente medio

4. ALCANCE

El presente proyecto, que forma parte del Plan de Acción de Calidad 2013-2014 elaborado por TLS, consiste en elaborar unas guías sencillas para la implantación de todos los procesos claves de calidad de ALSTOM.

A continuación, se adjunta el Quality Action Plan previsto para Franquicia:

Detailed Action Plan	May	Jun	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Progress
1 - Franchise list review – analysis of gaps, new procedures inclusion, adaptation to Transport Process Map, ownership of procedures,...														10%
2 - To prepare franchise packs including minimum requirements per function														10%
3 - To update franchise share point														0%
4 - To define a methodology to evaluate the franchise compliance (Project, Site, Country) and REX (L! Audits, external audits,...)														0%
5 - Explanation on new franchise list & methodology to Zone / Country QSRW Dir.														0%
6 - Explanation on new franchise list & methodology to Country QMS Responsible & PrQS Managers														0%

Figura nº5. Quality Action Plan TLS

Tal y como podemos ver en la figura anterior, nuestro proyecto se ha basado en desarrollar el apartado 2 del Plan de Acción, centrándonos específicamente en los procesos cuyo propietario es la función de Calidad.

5. OBJETIVOS

- ✚ Lograr que los PrQS Manager de todos los países trabajen de forma similar, independientemente del país en el que se encuentren, y de forma rápida para poder tener el nivel de calidad definido por Alstom lo antes posible y poder iniciar el proyecto.
- ✚ Darles una visión más sencilla de la documentación necesaria para poder implantar los procesos (registros y entregables).
- ✚ Identificar aquellas actividades no definidas en el procedimiento que deben haberse implantado con anterioridad al inicio del proceso.
- ✚ Identificar las actividades concretas que deben llevarse a cabo a lo largo de todo el proceso.
- ✚ Identificar las interfaces con los distintos departamentos.
- ✚ Elaborar entregables para la Dirección de Calidad y Medio Ambiente.

6. FOCUS

Dirigido a los Responsables de Calidad de proyectos en países emergentes donde Alstom empieza una actividad nueva y no disponen de una estructura madura.

7. PLAN DE TRABAJO

El plan de trabajo que se siguió durante la ejecución de este proyecto fue el siguiente:

1. Reunión inicial con la Dirección de Calidad de ALSTOM. En esta reunión se identificaron las necesidades de la dirección de Calidad y Medio Ambiente, el alcance, los objetivos y el tiempo en el que debía culminarse el proyecto.
2. Realización de las guías en forma de diagrama de flujo para su fácil comprensión.
3. Revisión semanal de las guías que se debían desarrollar según el planning inicial.
4. Revisión final de las guías .
5. Entrega de la documentación.

8. DESCRIPCIÓN DEL TRABAJO REALIZADO

Los pasos que hemos seguido para la correcta realización de este proyecto, han sido los siguientes:

1. Revisar procedimientos y procesos ya definidos a nivel de Alstom (Franquicia).
2. Identificar los entregables y los inputs de los procesos.
3. Identificar las interfaces con las diferentes funciones implicadas en el proyecto.
4. Los inputs y entregables de calidad se definen en detalle.

Todos los flujogramas realizados mantienen la misma estructura:

- ACTIONS: la columna Actions detalla las distintas actividades que se realizan dentro del proceso y el responsable de realizarlas



Figura nº6. Ejemplo Actions

- **DETAILS:** la columna Details realiza aclaraciones relacionadas con las etapas del proceso y hace referencia a procedimientos de entrada y salida y a aquellos procedimientos necesarios para la comprensión de algunas actividades del proceso.

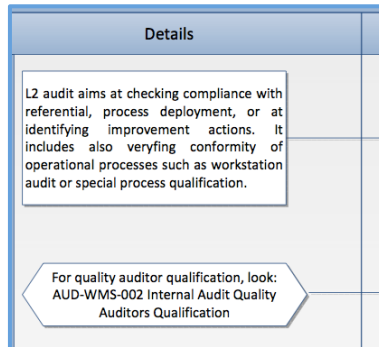


Figura nº7. Ejemplo Details

- **HOW TO IMPLEMENT:** en la columna How To Implement se detallan los entregables previos al inicio del proceso que deben estar implantados para la correcta implantación, los entregables a preparar para la implantación del propio proceso analizado y los entregables que proceden de las diferentes interfaces con otros procesos y/o funciones necesarios para la implantación.

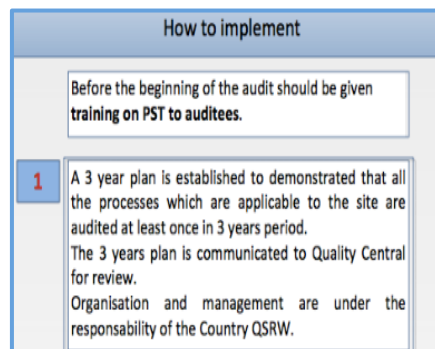


Figura nº8. Ejemplo How To Implement

9. ENTREGABLES

Los procesos de calidad que se tienen que implantar en estos nuevos países y que hemos generado como entregables para la Dirección de Calidad y Medio Ambiente de ALSTOM han sido los siguientes:

- Guías en forma de diagrama de flujo de los siguientes procedimientos:

- Generales del Sistema de Gestión de Calidad:
 - Control of Documents
 - Control of Quality Records
 - Non conformities management
 - Corrective and Preventive Actions
 - Control of monitoring and measurement devices
 - Cost of Non Quality
 - Audits
 - Manage Customer
 - Manage System
 - Para gestionar el aseguramiento de calidad de proveedores, Alstom dispone de cuatro procedimientos específicos:
 - External FAI: First Article Inspection
 - New supplier SQA validation
 - Quality Escalation Process
 - TLS Supplier NCR process management

- Específicos de Alstom:
 - Top10 issues: proceso para gestionar y reportar en el día a día los problemas de calidad detectados en los proyectos y en el desarrollo de productos que puedan afectar al cliente o a la seguridad ferroviaria y priorizar Acciones Correctivas y Acciones Preventivas para los problemas principales.
 - DFQ: Design for Quality. Tiene como objetivo revisar en las distintas etapas de un proyecto los niveles de calidad del proyecto. Diseño cubre todas las actividades relacionados con el desarrollo del producto (especificación, realización, integración y validación).
 - Railway Safety: Gestión del proceso de seguridad ferroviaria. Establece las reglas operacionales la implantación de la seguridad ferroviaria en todos los proyectos de mantenimiento.

En el Anexo 1 se adjuntan los flujogramas anteriormente citados.

10. CONCLUSIONES

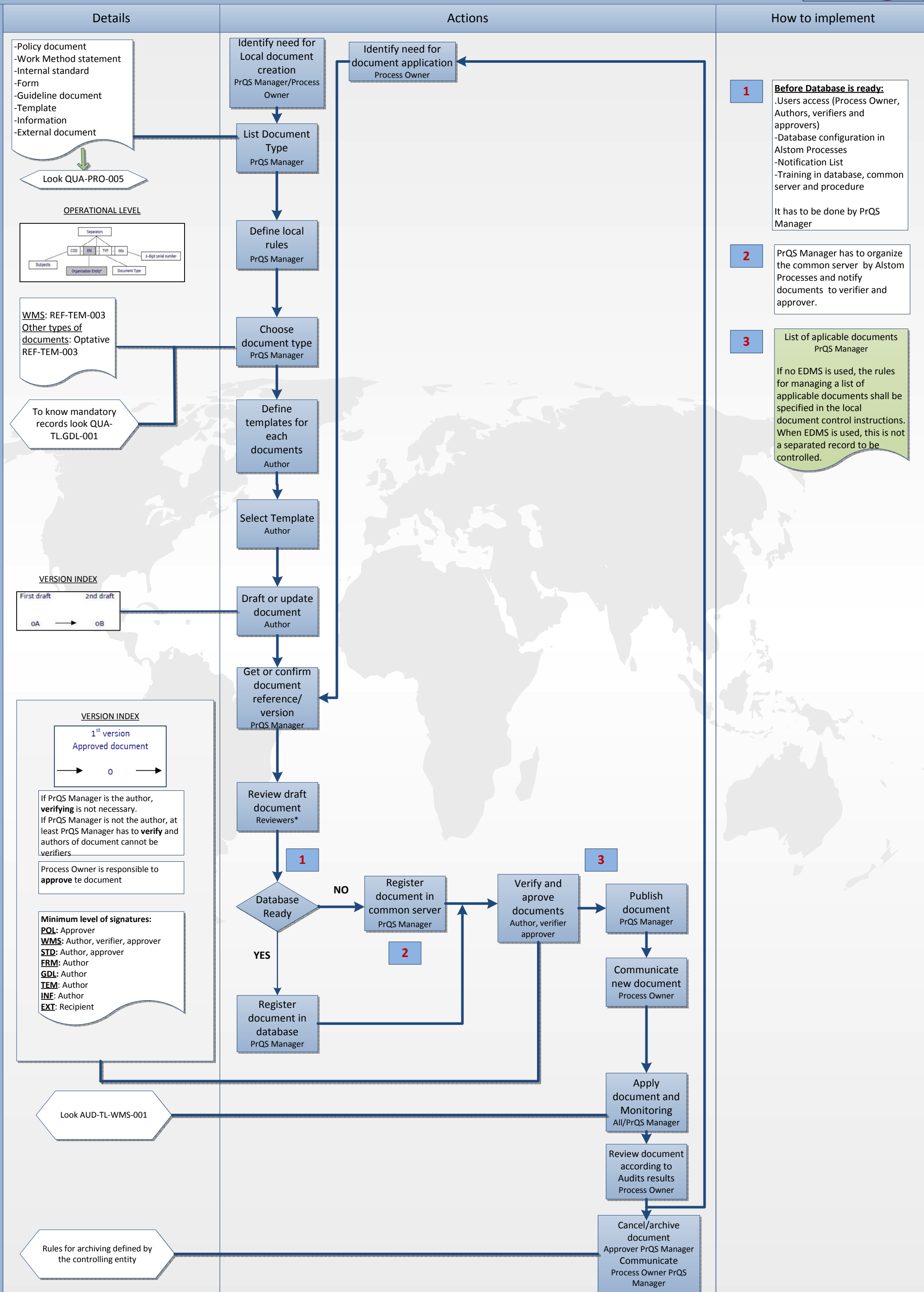
Una vez finalizado el proyecto y contrastado con los objetivos planteados, podemos afirmar lo siguiente:

- ✓ Se han definido flujogramas para todos los procesos de calidad.
- ✓ Se han identificado las interfaces con los diferentes departamentos para cada proceso de un proyecto.
- ✓ Se han adaptado a las estructuras reales de proyecto.
- ✓ Se han identificado los registros que se generan en cada actividad.
- ✓ Se han detallado los pasos a seguir en cada proceso y las entradas necesarias para la correcta implantación de los mismos.

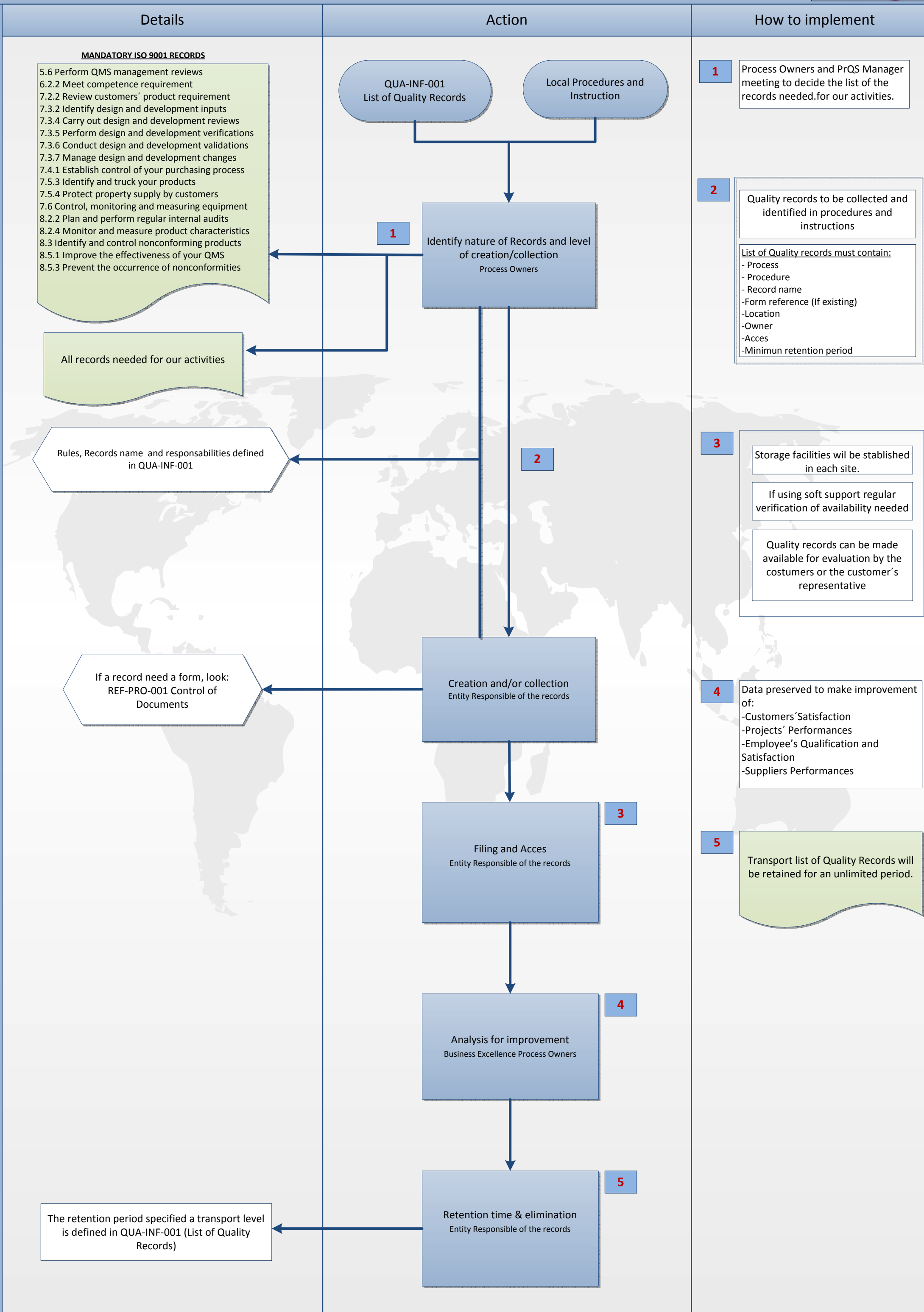
Como se puede observar, nuestro proyecto ha solucionado dos de los problemas detectados inicialmente en el análisis de situación de partida. El tercero de los problemas (falta de método ágil para actualizar los procedimientos) no se ha solucionado en este proyecto, puesto que en el Plan de Acción de TLS que hemos visto anteriormente se incluye un método para actualizar los procesos y ya hay un equipo trabajando en ello.

Una vez finalizado el proyecto, los proyectos de Alstom podrán utilizar esta herramienta de forma inmediata en todos los países y así, poder alcanzar el nivel de calidad requerido por Alstom de forma rápida y sencilla y antes del comienzo de los trabajos.

ANEXO I. DIAGRAMAS DE FLUJO



* Author, Process Owner, Representative of the Quality function and Process Experts



Details

Actions

How to implement

Types of Non Conformity:
 -Products and Service non Conformities
 -Process (definition and implementation) non Conformities

Criticality of a Non Conformity:
 -Major Non Conformity: Non conformity which affects: Customer Satisfaction; Business Performance; Product/Service characteristics such as usage, availability, maintainability, security; Fulfillment of Quality, time and costs requirements; Health and safety of clients and personal
 -Minor Non Conformity: The Rest of NC not mentioned above

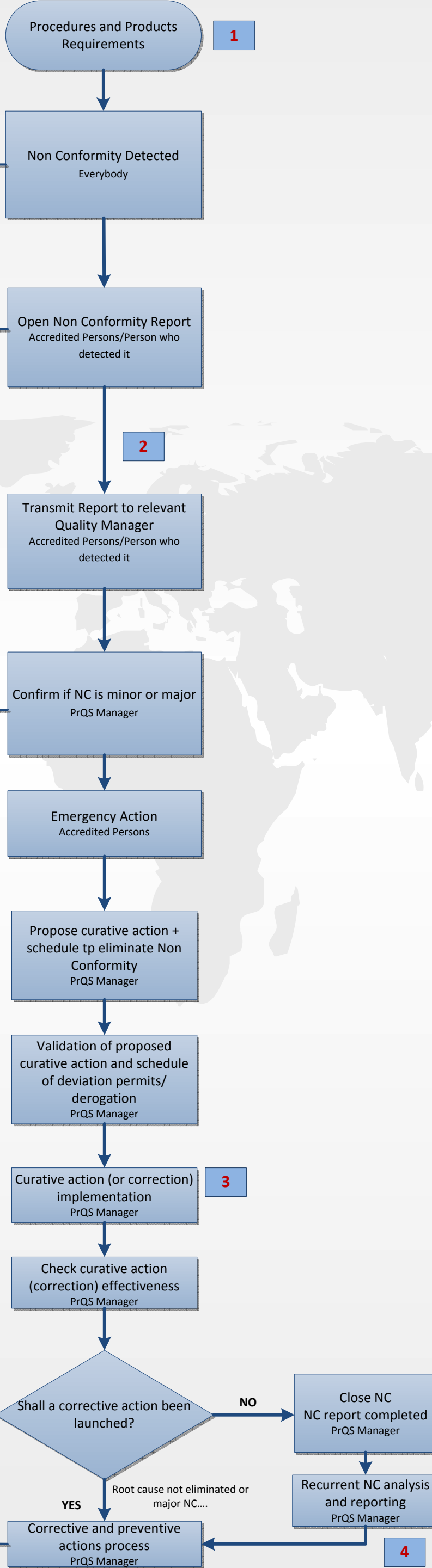
-Product/Service NC: Trained person in department/Workshop concerned
 -Process NC: Process owner or Process coordinators in concerned organisation, auditor.

For more details about Criticality of NC, look rules: QUA-PRO-002: Non Conformities Management Section: 2.1.3

For major incidents in Rolling Stock Product Line, look: IPL-PRO-003: Major Incident Alert Procedure

For Customer Quality Issues shall follow: QUA-WMS-001: Top 10 Customer Quality Issues

To check possible needs for corrective or preventive actions, look: QUA-PRO-004: Corrective and Preventive Actions QUA-TL-GDL-003: Corrective and Preventive Actions Guide



1

Training in Non conformities detection

For detecting Non conformities we need:
 -Products Requirements
 -Incoming Inspection Procedure
 -Customer Complaints
 - Control of monitoring and measurements devices Procedure
 -Audits Procedure
 -Quality Control Results

Creation of Non Conformity format

MINIMUM CONTENT OF NC

- Type of NC
- Unique number.
- Minor or major non-conformity (see definition)
- Description of the problem
- Classification
 - 1/ For Incoming Inspection - see supplier management
 - 2/ For other products -
 - Type of product
 - Platform
 - Project phase
- Name of Person in Charge
- Link with CONQ : each CONQ value must be linked to a non conformity and its root(s) cause(s).
- Progress of correction
- Deviation permits or product released if authorized by relevant quality manager
- Closure of NC or decision for corrective action

2

Non conformity monitoring must be done after opening non conformity report until Non Conformity closure. Monitoring format should be done in excel sheet with the following KPI's:
 -Type of Non Conformity.
 -Where
 -Who
 .Opening date
 .Closure date
 -Repetitive
 -Recurrent

3

1. Action plan shall be defined and communicated if solution is complex
 2. Progress measurement method with acceptance criteria will allow a formal closure of the actions.

4

Process NC reported to PrQS Manager

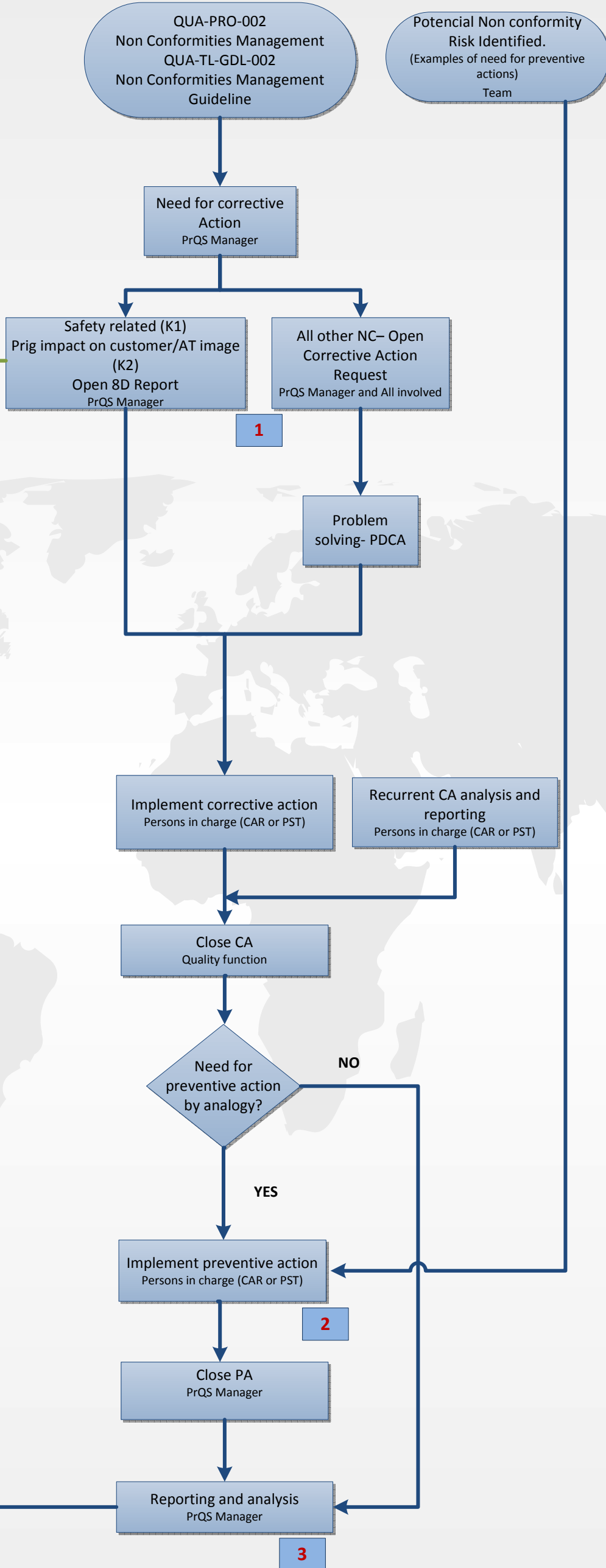
Details

Actions

How to implement

Inputs that lead into a corrective actions are:
 -Unclosed non conformities after
 -All major product, service or process Non Conformities
 -Trend analysis of non conformities made by quality functions and process owners or department heads
 -Customer claims
 -Return of Experience
 -Findings form Audits, EHS inspections

Go to QUA-TL-GDL-004 "TOP10" flowchart



1 K1 and K2 NC must follow the 8D method in PST (Problem Solving Tool).

 Corrective Actions for All other NC can be handled with a simplified CAR Form or PST. If you use PST, you can use Action Tracker module or PDCA module.

 After that, all the members of the project team must have access to the platform. To do this, enter in <https://alstom.helpweb.net>, create a new account, enter the employee code in ALPS ID and then you will receive an email with your password. Project has to be created in PST. If this is not the case, you must contact with Zone or Country QSRW Director.

2 A corrective Action Request from QUA-FRM-001 (CAR form) can be used to monitor implementation of preventive actions. If PrQS Manager decide not to use this Form, he must define another CAR form with this minimum content:
 - Opening Date
 - NC Description
 - NC Causes
 - Proposed Action
 - Responsible and implementation date
 - Deadlines
 - Tracing
 - Responsible of closing, result and closing date

3 PrQs Managers shall analyze the trent and identify improvement actions.

 They shall report monthly the progress on corrective and preventive actions treatment when they are linked to non conformities generating a Cost of Non Quality (CONQ):
 MA-05-INS-001 (CONQ Procedure)

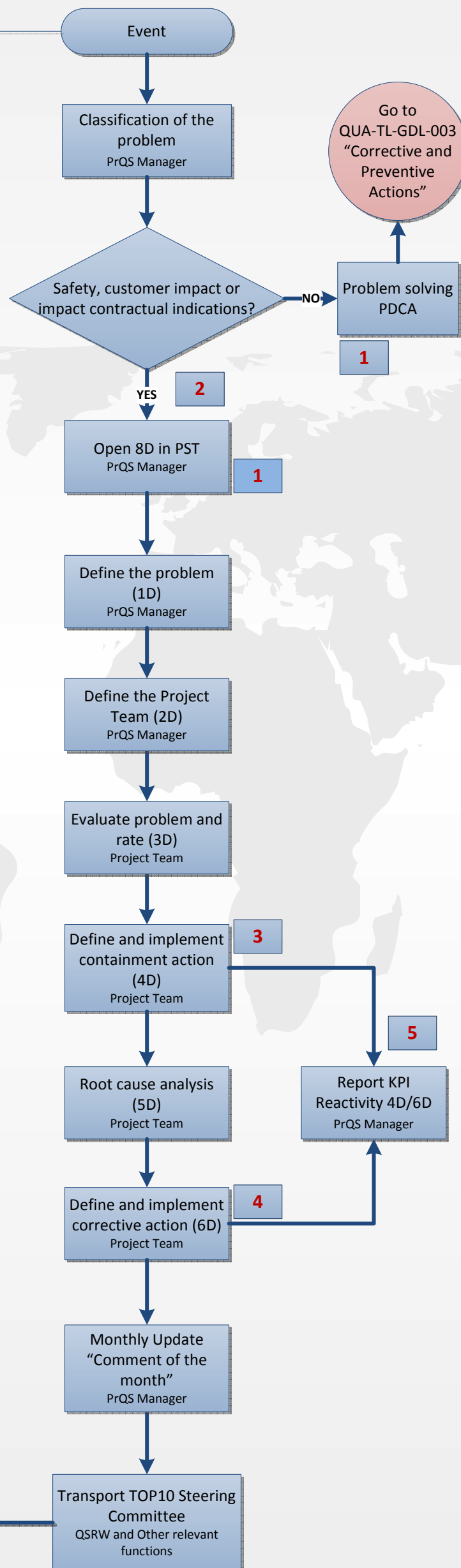
The QUA-WMS-001 (Top 10 Customer Quality Issues) is one way to report this actions for major problems.

Details

What is a Customer Quality Issue?
 It's a quality issue that affect the customer (present and future):
 -Effect on **safety** of operations.
 -Effect on **Revenue** Service.
 -Effect on **Quality of service**.
 -Effect on **maintenance** costs borne by the customer.

An event can occur during:
 - Exploitation (commercial service)
 - Preventive maintenance review
 - Corrective maintenance

Actions



How to implement

1 PrQS Manager ensures that the issue is recorded in the Problem Solving Tool "HLP Web"

 After that, all the members of the project team must have access to the platform.
 To do this, enter in <https://alstom.helpweb.net>, create a new account, enter the employee code in ALPS ID and then you will receive an email with your password.

 Project has to be created in PST. If this is not the case, you must contact with Zone or Country QSRW Director.

2 **SAFETY ISSUE:**
 For this kind of problems, above all the process mentioned in the flowchart, you have to create an Alert by email.
 Information must arrive very quickly (2 hours maximum) to the Top Manager before the customer contact with him.
 There must be a distribution list of the people who must be notified, a local level list and a list for the entire organisation.
 For more information, look RSA-TL-GDL-001 "Safety Railway" flowchart.

3 4D must be implemented in less than:
 - **15 days for safety issues.**
 - 30 días for the remainder of the issues.

4 6D must be implemented in less than 8 months

5 PrQS Manager has to report monthly the KPIs Reactivity in the "KPI's Dashboard" (Excel sheet) to the Country/Zone QSRW Director.

Backlog Management
 - Any issue listed in the Transport Top10 is automatically entered in the Transport backlog
 - Issues listed in the backlog are subject to continuous scoring until closure
 - Each month, backlog items are "eligible" to be part of the Top10, based on the evolution of their scoring
 - If the progress of an issue deviated from the commitment, the Steering Committee reserves the right to push progress score to 7
 - In the case of a backlog issue re-entering the Top10, it is considered as a "Top Back" and gets strong action follow-up with appointment of a Sponsor (in general an executive manager)
 - Backlog performance (e.g: Number of outstanding issues, avg. time to containment, avg. time to closure) is subject to continuous monitoring and reporting to Top Management

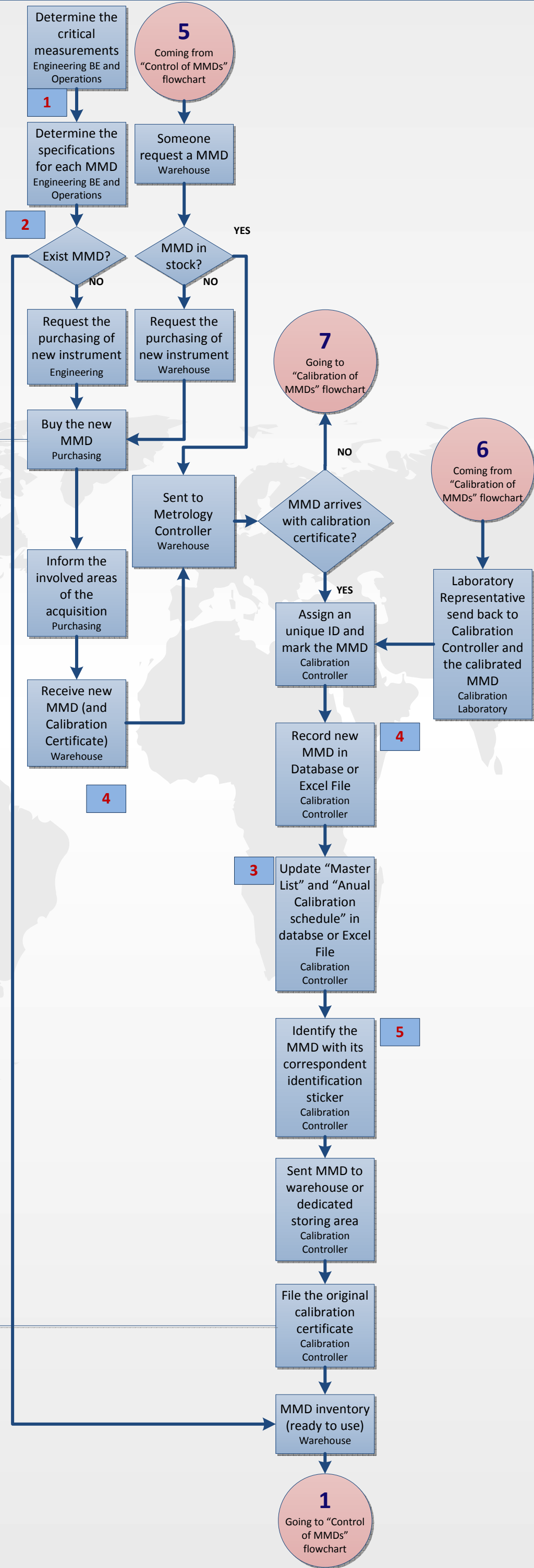
Details

Actions

How to implement

Including its Calibration Certificate, when possible. Calibration Certificate must have traceability with local or international certified entities.

Look list of Project Quality Records QUA-TL-GDL-004



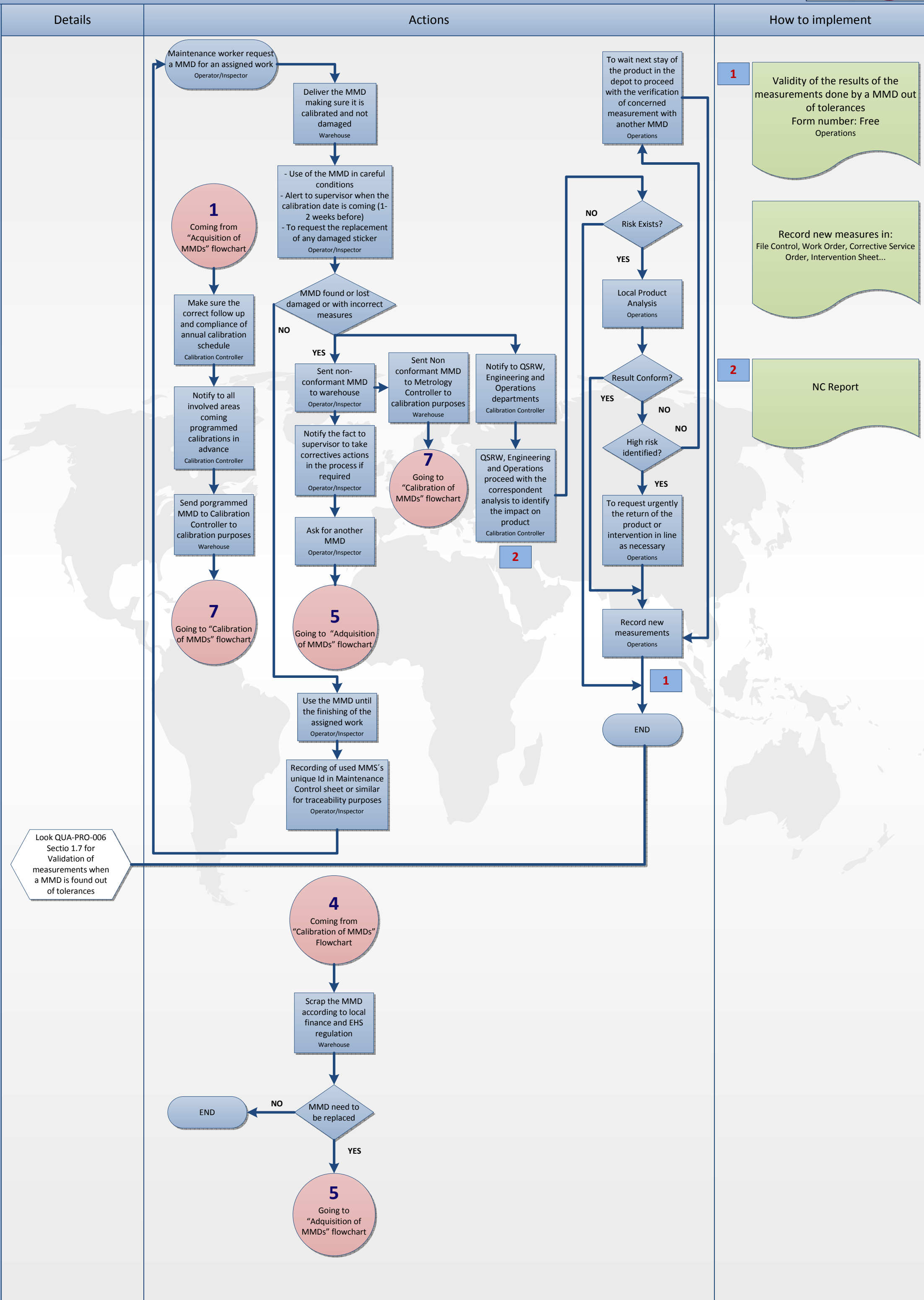
1 Engineering must determine the critical measurements in order to avoid that specific quality characteristics are out of tolerances. **(Maintenance Plan)**

2 Purchasing has to take into account the specifications given by Engineering for Purchasing purposes.

3 Calibration Certificate
Calibration Controller

4 If Database doesn't exist, create a excel file with:
-Tool name
-Tool Id. (Code, Serial number...)
-Calibration Period
-Tolerances
-Measurement Range
-Manufacturer
-Last/Next Calibration date

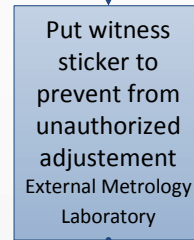
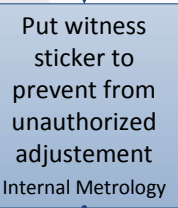
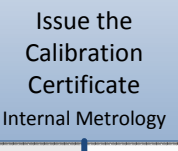
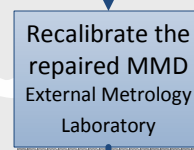
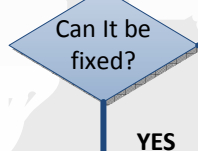
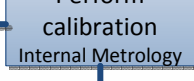
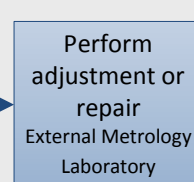
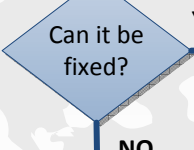
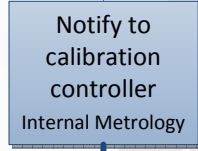
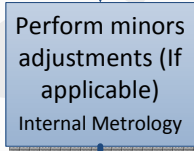
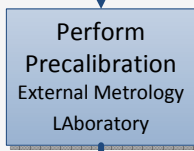
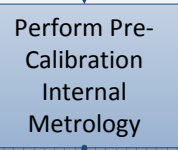
5 If the External Laboratory sends its own sticker, you must use this sticker. If it is not the case, you must define your own stickers, there are two types:
1. Calibrated Equipment:
-Equipment Id.
-Next Calibrated Date
-Limit of use
2. Out of Calibration (Red)
If the equipment should be verified internally, there must exist a Verification Sticker.



Details

Action

How to implement



A general guide to be used by Calibration Controller is needed to determine if manufacturing aids require a calibration certificate:
 - If the MMD contributes directly to confirm the Quality of the product, It shall be calibrated and follow this procedure.
 -If not, It shall be clearly identified as "No Calibration Required".

To perform the calibration is necessary:
 - Documented Instructions
 -Qualified Personnel
 -Traceable standards to international standards
 - Ambient conditions controlled
 - MMD is required to stay in the area where it's going to be calibrated for an appropriate time to avoid temperature variations.

Internal Calibration Certificate must contain at minimum:
 - Tool ID
 - Serial Number
 - Brand
 - Model
 - Traceability
 - Measurement Uncertainty (if possible)
 - Deviations
 - Calibration Results
 - Ambient Conditions

External Calibration Certificate must contain at minimum:
 - Same as mentioned previously and
 - Customer name (Alstom)
 - Printed in sheets with letterhead
 - Signed by a qualified representative

1 Calibration Controller must inform to relevant areas when a MMD has been found out of tolerances, to allow implementation of corrective and preventive actions.

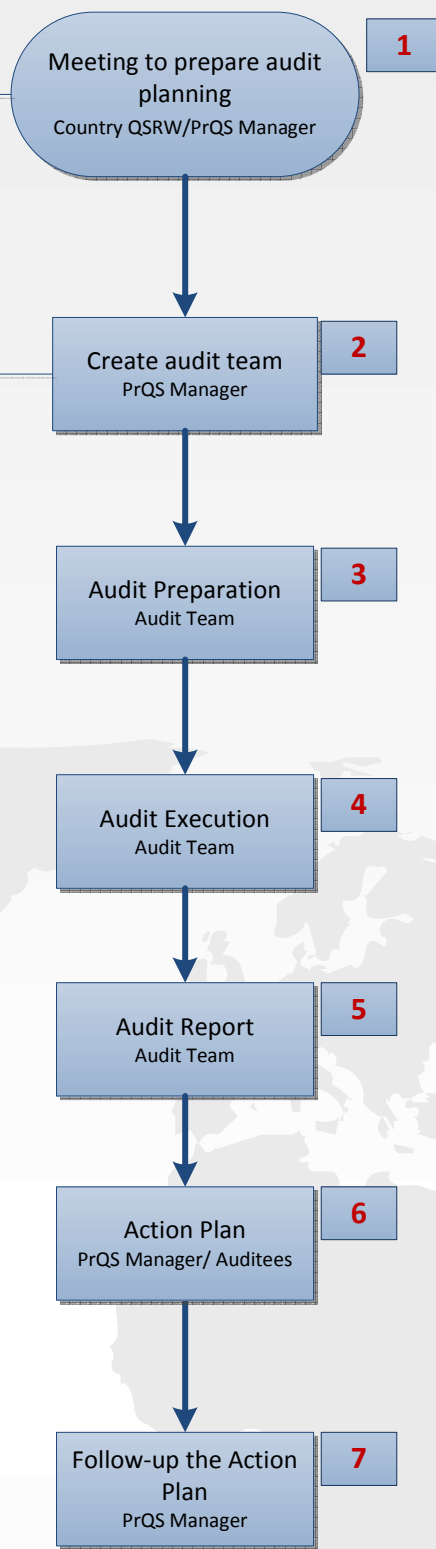
2 MMD disadjustment report Form number: Free Calibrations Controller

Details

L2 audit aims at checking compliance with referential, process deployment, or at identifying improvement actions. It includes also verifying conformity of operational processes such as workstation audit or special process qualification.

For quality auditor qualification, look: AUD-WMS-002 Internal Audit Quality Auditors Qualification

Actions

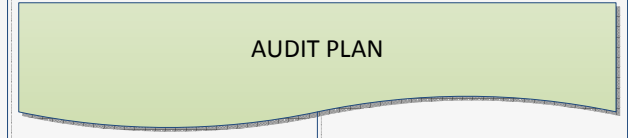


How to implement

Before the beginning of the audit should be given **training on PST to auditees.**

1 A 3 year plan is established to demonstrated that all the processes which are applicable to the site are audited at least once in 3 years period. The 3 years plan is communicated to Quality Central for review. Organisation and management are under the responsibility of the Country QSRW.

Input for an audit plan:
 - Organization chart
 - External audits if there
 - Results of previous audits
 - Changes in the system or in the organization



Is mandatory:
 - For each function, identify applicable documents.
 - For each function, define agenda
 - Define Auditor Team and Lead Auditor
 - Approved by auditees.

2 Audit team is composed of a Lead Auditor and Experts of the areas to be audited.

3 Audit preparation includes:
 - Read applicable documents.
 - Extract requirements.
 - Prepare check-list.

4 The opening meeting and the closing meeting are chaired by the Lead Auditor.

5 Audit report identifies NC, AOC (Area of Concern), OFI (Opportunity for Improvement) as well as SP (Strong Point).
 For each deviation:
 - Affected process
 - Procedures
 - Examples
 And "how to address actions for each type of findings" is explained by the Lead Auditor during the closing meeting.

6 QSRW and auditees are responsible to ensure that an action plan is in place to address different findings which are raised by the audit. Each action has a "due date", a "person in charge" and should include analysis of causes.

7 PrQS Manager supervises the overall follow-up of the actions until their completion, ensuring in particular that the NC are properly closed. Actions from audit findings have to be logged and followed-up within PST using QMSLI.

Details

Actions

How to implement

LOOK ISO 9001:2000, MNS-MAN-001 Transport Management Manual TMM

Quality Management System requirements

1

Select Customers to be interviewed
Customer Director/ Project Manager/ QSRW

Survey preparation using the Wall.C tool
PrQS Manager

2

Organise Meeting Plan
Project Manager

Meeting with the Customer
Project Manager/ PrQS Manager/ Customer Director (invited)

3

Analysis of the Customer Feed-back
QSRW/ PrQs Manager

4

Communicate the results to all owners of work-packages involved
PrQS Manager

Action Plans
QSRW/ Project Manager

Feed back to Customer
QSRW/ Project Manager

5

Monitoring the actions during the Project reviews
PrQS Manager

Yearly Report Synthesis for the Quality Management Review
PrQS Manager

6

LOOK MNS-WMS-001 Quality Management Review

1 Except particular case, to be justified, an inquiry is made at least:
- once a year
- at the end of every phase of the Project define in the Project Management Plan according to the rules of the document PMT-PRO-001 "Project Management Process in Tender and Contract"

2 To do this, you must have access to the Wall.C Tool. The Questions are chosen among the CST-INF-002 "Customer satisfaction Questionnaire", according to the Phase of the Project. Selection of the questions is directly done from the Wall.C Tool.

3 Surveys are to be conducted face to face with all the customers of ALSTOM Transport taking into account the cultural context of the concerned countries.

4 Excel file to be prepared to analyse results.

Results of inquiries:
- Strengths
- Weaknesses

5 Project Manager is responsible to ensure that answers are given to the Customer and gaps are filled-in in less than 6 months.

6 Customer Satisfaction Report

Details

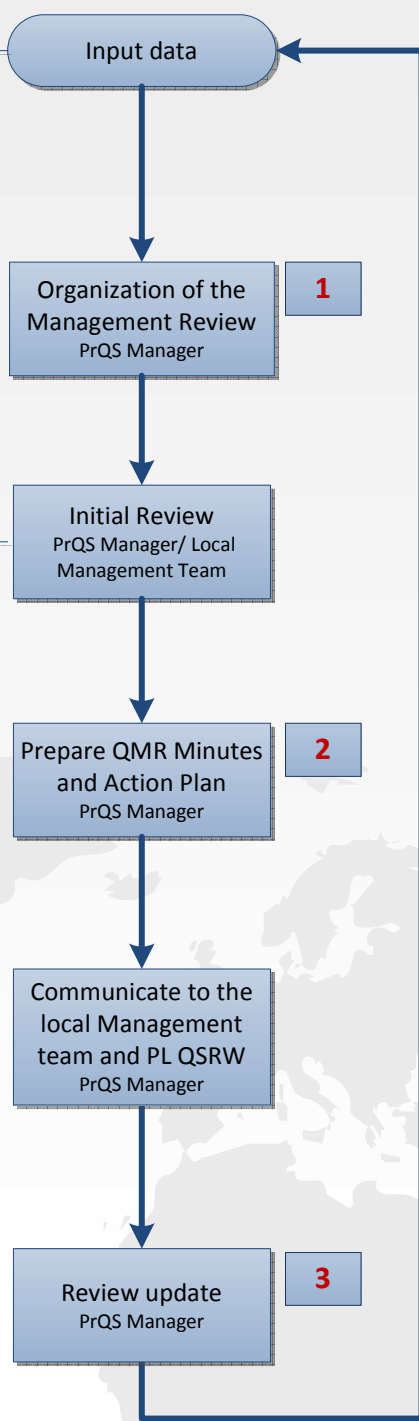
The input for each review consist of:

- Audit Reports
- Customer Feed Back
- KPI
- Non Conformances/ Corrective actions/ Preventive Actions
- Actions from the previous management review
- Results of Process Reviews
- Key Issues from Project Reviews
- Changes that could affect the management system
- Other issues

Typical agenda.
The Typical Agenda of the Reviews is based on the ISO 9001 and is intended to support the decisions:

- Reviews of the minutes of the last QMR to check the implementation of the previous action plan
- Analysis of the input data
- Analysis of the product/service conformity
- Analysis of the changes that could affect the business results
- Review of the suitability of the local Management System to meet the Business needs
- Review of the local committee
- Update of the Quality audit programme
- Conclusion of the Management team about the adequacy of the Management System with the Business Objectives, and its affectiveness.

Actions



How to implement

1 PrQS Manager must prepare the agenda of the review, and ensures that the input data are available and distributed to the attendees of the meeting. The attendees of the review are members of the local Management team. Others persons can be invited depending on the agenda.

2 **QMR MINUTES** including:

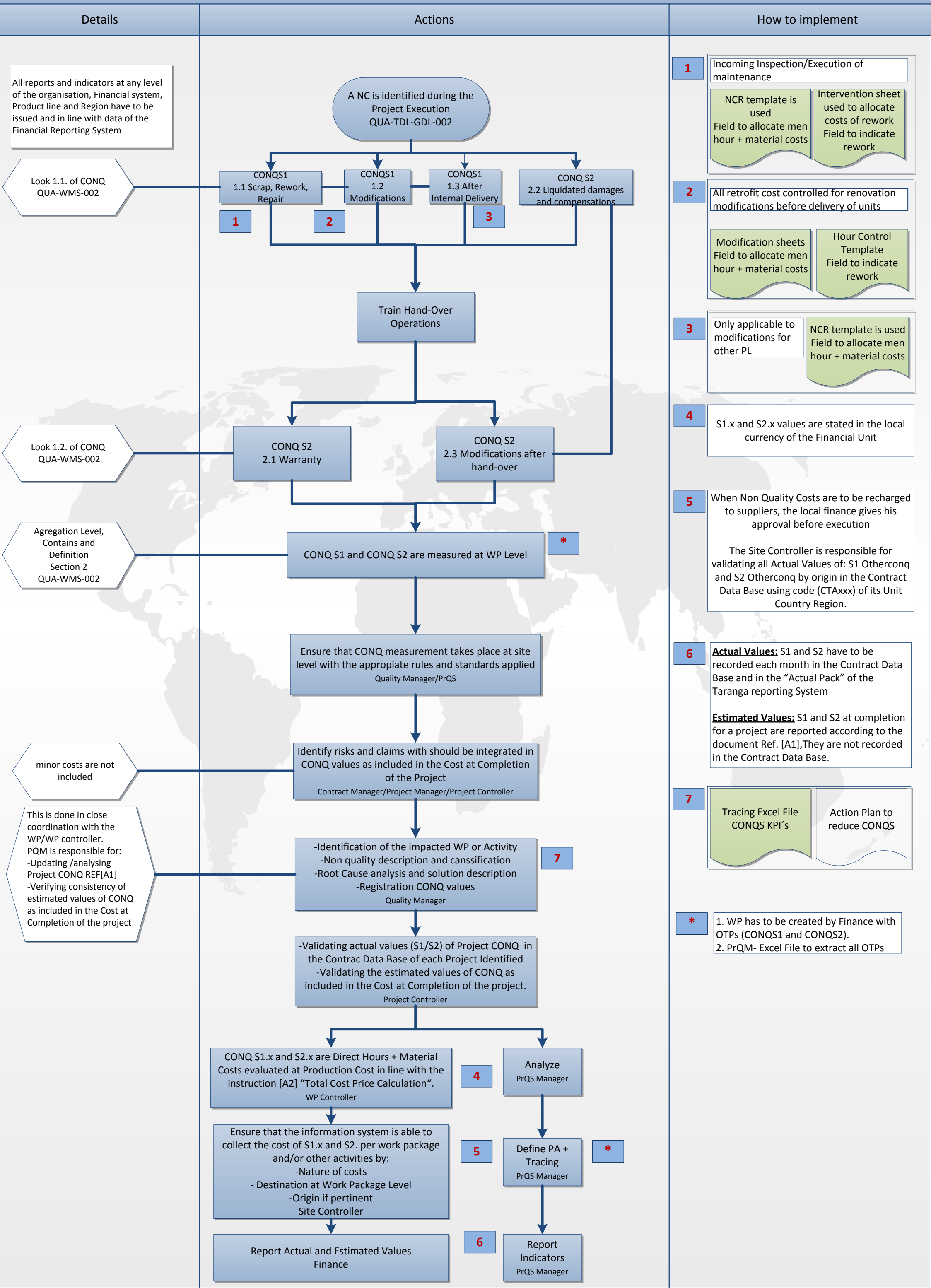
- Decisions taking during the review
- improvement actions plan for integration of business processes
- evidence of achievement of business objectives and customer satisfactions,
- updated local audit programme
- Conclusion of the Management formally records
- Objectives, with target and due dates.

You can use the template "MNS-TEM-005 – Template for QMR Minutes" to prepare and distribute the minutes of the QMR.

LIST OF ISSUES

AUDIT PROGRAMME

3 Between January and March, it will be done the Process Reviews, IA Reports, PR minutes and Internal Audits. In the Review Update, PrQs Manager monitors execution of action plans, prepares budget (when investments needed) and feed the PL QSRW.



Details

Actions

How to implement

The DFQ process main objectives are:

- To establish a common standard process for all activities related to transport products (in this case, maintenance).
- To structure the development cycle through key milestones (Gate reviews)
- Support core development activities and inputs/outputs for each stage.
- Enable efficient monitoring of the development activities
- Ensure coherence between Platform/Sub-Systems/Modules development activities.

Gate reviews are decision milestones used to verify the development progress at defined stages, assess the QCD maturity of phases and to authorise change of phase, based on **Go/No Go decisions**. This decision is based on the answers to the main questions in the checklist for a given Gate Review. The result of the review **will be go when**:

- No single unacceptable risk is recorded.
- The level of risk is acceptable for the sum of all the improvement actions.

Gate reviews are prepared using relevant **checklists** reminding the main GR objectives and describing the GR deliverables to be checked. The standard checklist for the Gate Review defines a fixed set of questions, the answers to which will provide a clear view of the state of the project. These checklists are available in TLS Prisma.

The main question to be answered is **«Can the offer be presented to Alstom management?»**

It is Applicable to all maintenance contracts with a total value of **2.5 million Euros**.

The Tender gate review should be scheduled as late as possible in the tender process, but not later than one week before the TRM «Tender Review Meeting» (for complex tenders, this should be a minimum of two weeks before the TRM).

«Can we start the process of mobilisation?»

Following the Tender phase, there is typically a period of project and resource start up called Mobilisation. These activities continue to a point where a maintenance facility is Taken over and is ready to start the Maintenance.

The MGR Should be scheduled as soon as possible after the maintenance Notice to Proceed (NTP)

«Can we take over the operation of depots and trains and/or infrastructure?»

The RGR should be scheduled with sufficient time before the start of Day-1 maintenance activities by TLS.

«Is the project in a stable condition and are the targets being met?»

The Maintenance facility is ready to start the maintenance activities.

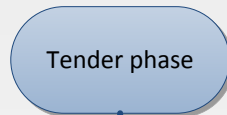
Contract execution begins with day one maintenance and may continue for many years during which time a level of stabilisation and maturity should be reached. The timing of PSR should be scheduled for 6 to 9 months after the commencement of full Maintenance operations.

«Can we start the process of de-mobilisation for this project?»

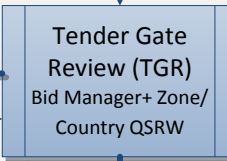
The DGR should be scheduled for a minimum of one month before HGR (or longer if required)

«Can we hand back the contract to the client (or their agents)?»

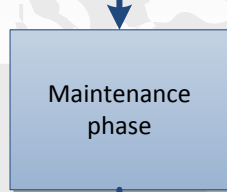
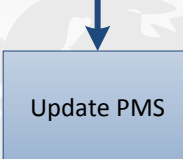
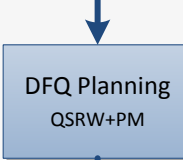
HGR should be scheduled for a minimum of one month before the project termination date (or longer if required)



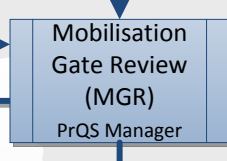
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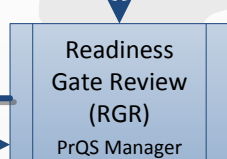
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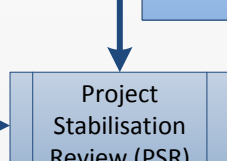
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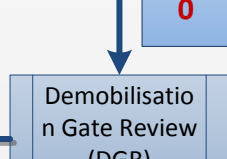
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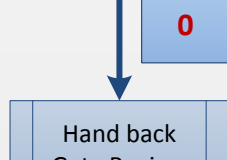
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QSRW Organise meeting with PM to assign responsibilities and due dates for each question on the check list.

QSRW and PM communicate responsibilities to team. They both update the check list and distribution to all (core team)

PM and PrQS Shall make the Action plan with the conclusions after the meeting. PrQS shall update the PMS with the meeting results.

At the beginning of the contract and each time that a GR is done, PMS must be updated. Between each stage, PrQS must check that all the points of the Action Plan are closed.

QSRW follow up.

<p>GR Check-lists</p> <p>Form Number: DFQ-TL-FRM-001,002,003,004,005 and 006</p> <p>Location: PMS</p> <p>Minimum Retention Period: 10 years</p>	<p>The main reporting tool for DFQ activities is the PMS, accesible through the intranet.</p> <p>Form Number: NA</p> <p>Location: Intranet Transport</p> <p>Minimum Retention Period: 10 years</p>
--	--

1

Formation on PMS shall be necessary

Details	Actions	How to implement
<p>Maintenance Project Safety Plan Form number: Project defined Location: As required by QMS</p> <p>The requirements for maintenance projects are typically:</p> <ul style="list-style-type: none"> - The new build project RAMS studies. Safety analysis will determine what systems or components require routine inspection or maintenance and what frequency. Normally this information will be included in the Maintenance Manual and ideally the safety requirements should be specifically highlighted. - Separate Hazard Analysis that considers the possible errors that may be introduced from the maintenance organization and its process (i.e. hazards not considered in the safety analysis of the product done by the new build project or Design Authority; for instance concurrent maintenance tasks could introduce new risks). Management of these risks is the responsibility of the Maintenance organization. - Where neither of the above two cases exists or it is not available to the maintainer, then a separate Hazard Identification study will need to be performed on the Product and the Processes. This is required in order to identify what are the important safety items, tasks and activities that will require special attention to ensure safety. A gap analysis from an existing Platform / Solution reference library of reference project may be an appropriate way to begin. <p>Sources of failure can be imposed on the system/product during the O&M (Operation and Maintenance activities) phase of a project including maintenance activities.</p> <p>The objective of this process is to ensure that maintenance tasks are defined and implemented in a way to maintain the safety level along with the operational phase. It covers the following tasks:</p> <ul style="list-style-type: none"> - Ensure that maintenance procedures take into account safety items and requirements. - Ensure the adequacy between the staff skill and the safety aspects. - Analyse any change in the maintenance organisation, procedures or supply chain/spare parts to assess impact on safety. <p>For more details, look RSA-WMS-006 "Process for Safety management within maintenance activities"</p>	<p>Safety policy PrQs Manager</p> <p>Define targets Project Manager</p> <p>Definition P. Safety Plan Project Manager</p> <p>Training Human Resources</p> <p>Communication PrQs Manager</p>	<p>1 Project management shall ensure that the Quality & Safety Policy MNS-POL_001, adopted by the executive management of the Company and implemented by the local country management, is communicated to all relevant staff as part of the induction, by briefing and training and awareness as required.</p> <p>For all new maintenance projects a dedicated Project Safety plan shall be written to document how safety is managed, risks are controlled and how the applicable requirements are met. The headings of this section of this document (summarised in Appendix B) gives the recommended structure for a typical Maintenance Project Safety Plan.</p> <p>2 For Railway Safety the overall target of maintenance is to preserve the originally specified levels of safety level as authorised, including the consideration of applicable regulations and standards for maintenance.</p> <p>Where possible, the Project Safety Plan should define qualitative and quantitative targets for how safety should be maintained and enhanced during the operational phase.</p> <p>3 The maintenance project shall implement a system to ensure that staff that perform safety related tasks have the required training and competence to execute these activities.</p> <p>The Process to follow for this stage is:</p> <ol style="list-style-type: none"> 1. To identify the necessary competences for the people, such as safety tasks, special processes... etc. 2. To make a competence matrix and analyze the components. 3. To compare the existing levels of competence with the necessary levels to acquire. 4. To establish a Formation Plan. 5. To implant the Formation Plan. <p>4 Information that is needed to ensure safety shall be captured, documented, monitored and communicated to the appropriate level within the company and externally. For this process the awareness of people shall be necessary.</p> <p>The Project safety Plan shall reference the scheduled internal meetings in interfaces that rely on safety information to take decisions and manage the on-going project safety risks. It also must include the formal and informal external interfaces.</p>
<p>Safety Risks Assessments Form Number: As required Location: As required by QMS</p>	<p>Risk identification & management Project Manager</p>	<p>5 Safety risks mitigation requirements from the RAMS analysis should be included in the maintenance and operating documents supplied with the New Build product. Safety related items and tasks should also be identified so that a greater level of safety assurance controls can be placed on them. All safety hazards inherent in the operational process shall be identified and recorded.</p>
<p>Change Management Documents Form number: As required Location: As required by QMS</p> <p>Key safety documents may include:</p> <ul style="list-style-type: none"> -Maintenance Project Safety Plan - Internal safety Authorisation document - Safety Risk Assessments (Railway Safety, not EHS) - Safety related technical investigation reports - Change management documents - List of safety related items (SRIL or similar) - Safety notices or instructions <p>For the Maintenance Project Safety Plan the following signatories are required:</p> <p>Written: Project Safety Engineer/RAMS Checked: Engineering/PTM Approved: QSRW Safety Assessor & Maintenance Project Manager</p> <p>Evidence of Maintenance done shall be recorded in a Maintenance Management information System</p>	<p>Stablish procedures Project Manager</p> <p>Management of Suppliers of Materials and services QSRW</p>	<p>6 Procedures shall be established to ensure that any technical, operational or organizational changes proposed are assessed for Railway Safety. For any change, as minimum, the following steps shall be considered:</p> <ul style="list-style-type: none"> - Change request (with reasons and justification). - Change review and approval/ rejection decision. - Instruction to implement the change. <p>7 Where safety critical activities are sub-contracted, AT must ensure that the supplier is competent to perform the work and shall manage the supplier accordingly, including verification and validation checks as required. It is necessary to understand which components are safety related and placing appropriate requirements on the suppliers. Safety critical parts shall be purchased from an approved supplier.</p>
<p>List of safety related items (SRIL or similar) Form number: As required Location:As required by QMS</p> <p>Safety notices or instructions Form number: As required Location:As required by QMS</p>	<p>People Management Project Manager</p> <p>Process for management and reporting of safety Related Issues Project Manager</p>	<p>8 Projects shall ensure that human resources issues are integrated into overall management of safety, particularly with respect to occupational Health and Safety.</p> <p>9 The maintenance project shall have a procedure to implement these requirements that covers at least the following stages:</p> <ul style="list-style-type: none"> - Notification - Containment actions - Investigation - Implementation of the permanent solution on the fleet.
<p>The specific Quality procedures that must be taken into account for this process are: Control of Documents, Control of Quality Records, Non Conformities, Preventive and Corrective Actions Management (8D); Suppliers Management and Audits Management. Other procedures that must be also taken into account are: Risks Management, Configuration Management, Design Management and Competences Management</p>	<p>Continuous Improvement</p>	<p>10 The maintenance project shall have a means for two way communication of REX with the appropriate Platform/Solution/ Zone references and with other tenders and projects.</p>

Details

If there is no local SQA organisation present in country, PrQS Manager decide if the local organisation and/or a SQAExpert from other country or product line will perform the assessment.

The assessment will consist of some of the following activities at the supplier plant, dependant on requirement, to assess the supplier capacity to continue the process of qualification:

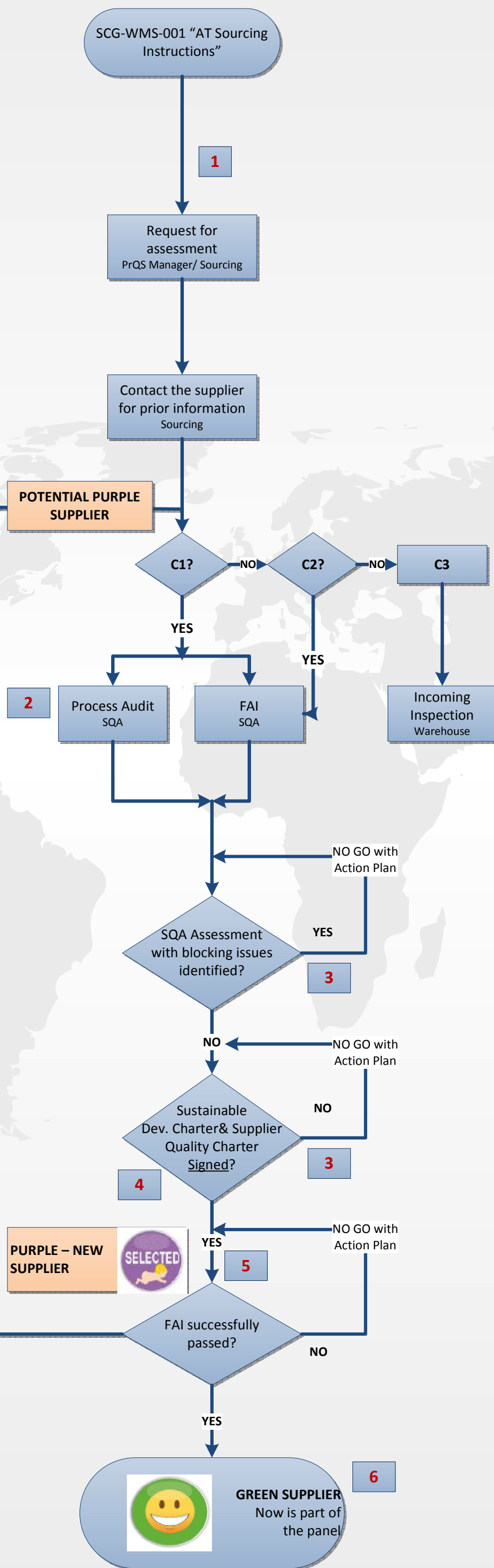
- Quick Industrial Assessment (Quick Industrial Assessment Questionnaire)
- Sustainable Development Audit (SQA-TEM-003 Sustainable Development Audit Template)
- Quick Process Audit (SQA-TEM-002 Process Audit Questionnaire).

The following assessment level is required as a minimum:

- GE Supplier (non production parts)
- Production supplier
- Panel Supplier
- Self assessment audit
- Quick Industrial Assessment
- Quick Process Audit

Look classification System in SQA-PRO-001 Supplier Quality Assurance

Actions



Look SQA-TL-WMS-001 External FAI

How to implement

1 To carry out this process, **before:**

1. Sourcing must identify supplier, products and services.
2. Sourcing must verify if they are on the Alstom's panel.
3. Engineering has to make the list of critical project materials.
4. In QCD periodic meetings (Quality, Sourcing, Engineering) establishing the Supplier Product List (SPL).

LOOK "External Fai" SQA-TL-GDL-002, to know different levels of quality.

2

- SUSTAINABLE DEVELOPMENT AUDIT REPORT
- CLASSIFICATION AUDIT REPORT
- PROCESS AUDIT REPORT

3 In case of:

- Quick Process Audit with PI<50%, or
- QIA<55, Major EHS issues, or
- major issues found during the assessments (blocking points) or
- in the case when the supplier has not yet signed the Supplier Quality Charter (SQA-STD-001) and the Sustainable Development Charter;

SQA will manage an action plan with the supplier to close the open issues.
SQA Manager has to follow-up the Action Plan.

If it is considered that we still have to move forward with the supplier following any sort of unsuccessful assessment, an action plan needs to be created and all actions need to be completed an a re-assessment carried out **within a 3 months period**.

4

Steps:

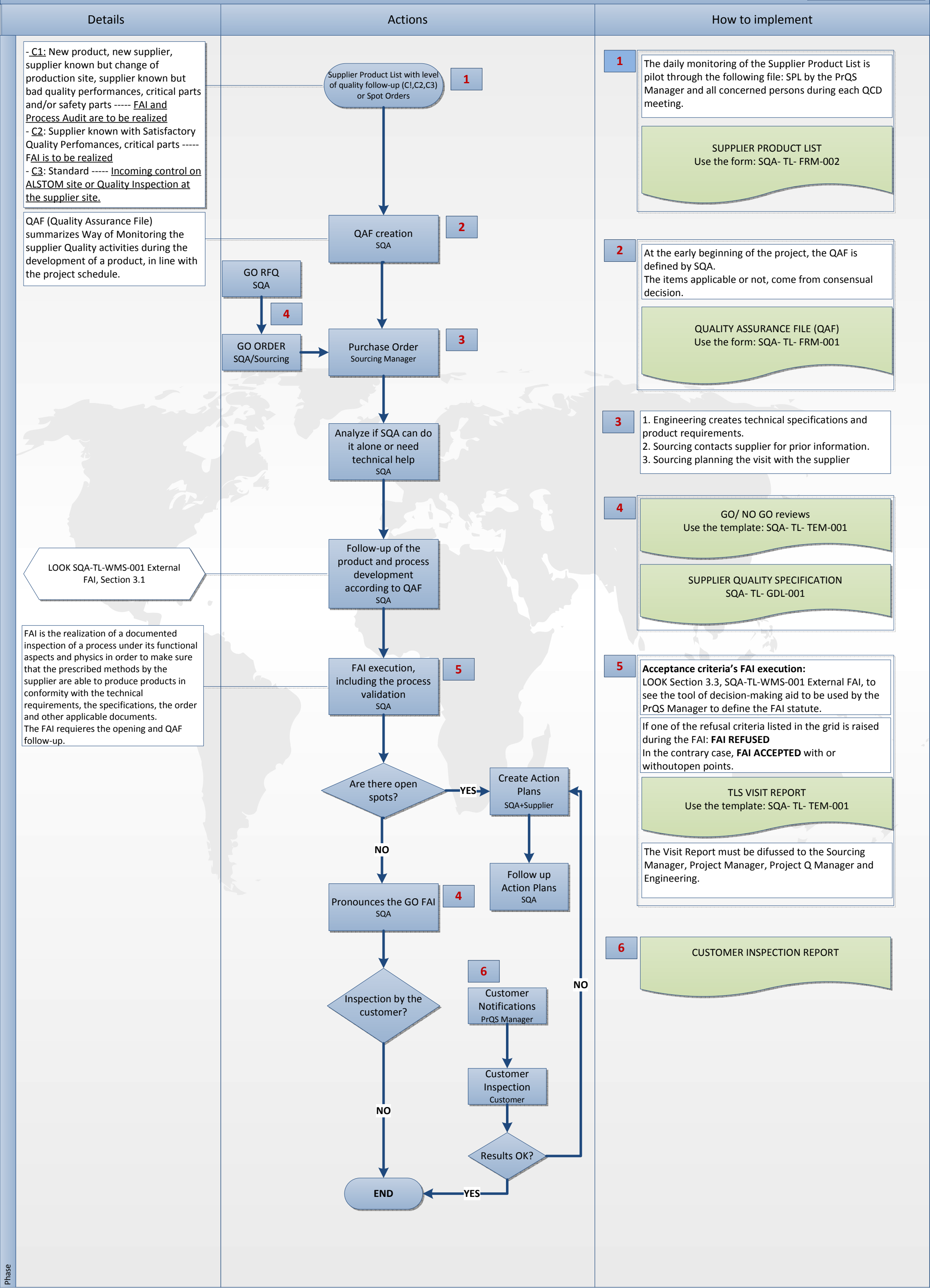
- 1- Process Audit
2. FAI.

- SUPPLIER QUALITY CHARTER
- SUSTAINABLE DEVELOPMENT CHARTER

5 SQA Manager will provide to Sourcing the Supplier Scorecard filled and supplier will be allowed to receive purchase orders from Alstom, passing from the status Potential Purple to the status Purple.

- SUPPLIER QUALITY SYSTEM CERTIFICATION

6 If the supplier applies to start supplying products in a different commodity or wants to transfer production to another production site, then the process must be repeated.



Details

Actions

How to implement

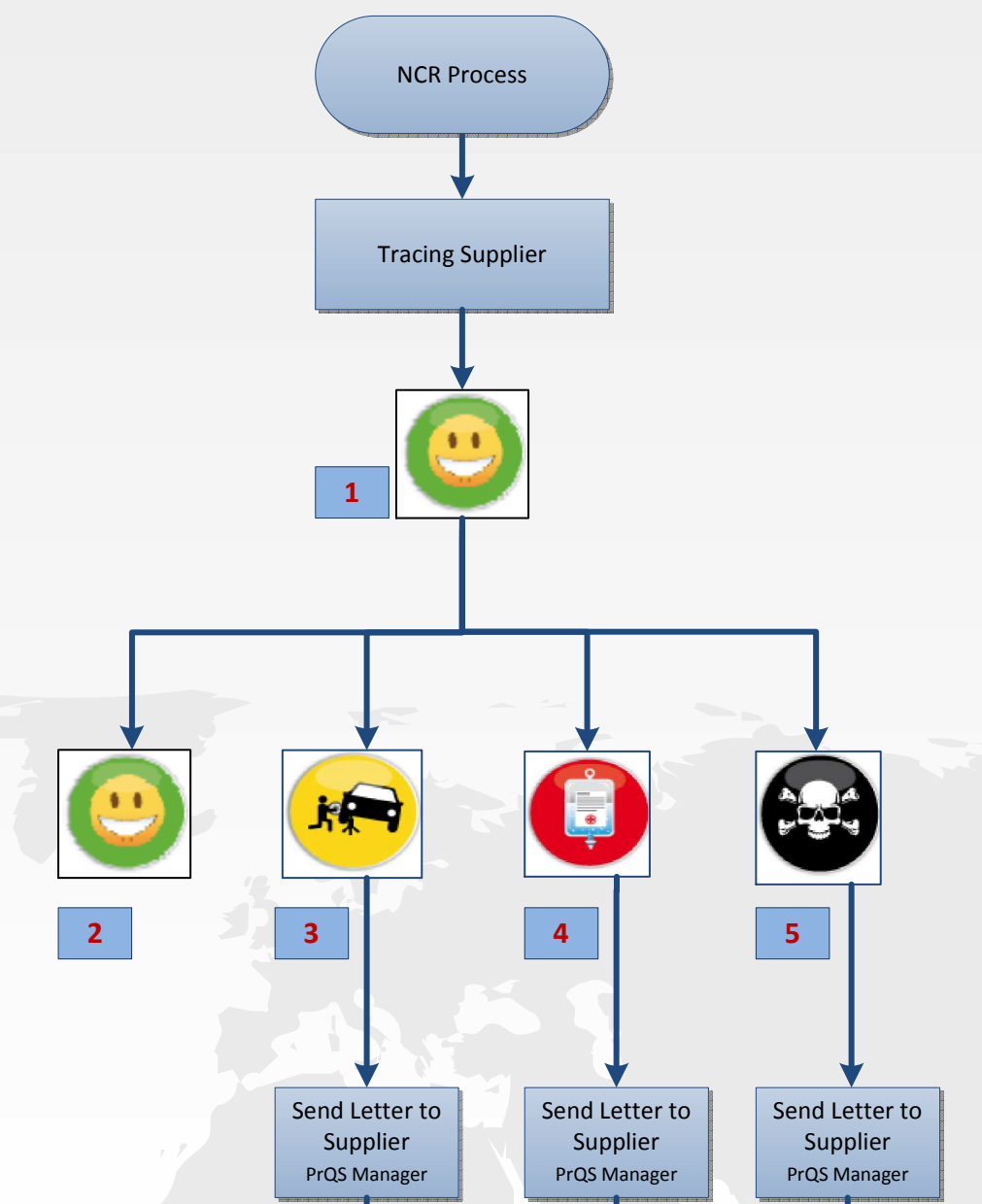
If no Quality incidents : the status is **"GREEN"** by default

Local TLS Site
Local NCR rate or FAI are below the objectives & action plans is/seem different

All TLS Site
-Yellow for more than 2 months, without improvements
-Or yellow for >3 TLS sites
-Or critical quality issues

All Product Lines
-Red for more than 3 months without efficient action plan
-Or critical and unacceptable quality issues
-Or already black for other P/L

- Look format letter in TLS Supplier Quality Escalation Process Section: SQA-TL-WMS-003, Section A1
- Look format letter in TLS Supplier Quality Escalation Process Section: SQA-TL-WMS-003, Section A2
- Look format letter in TLS Supplier Quality Escalation Process Section: SQA-TL-WMS-003, Section A3
- To inform an alert is lifted, Look format letter in TLS Supplier Quality Escalation Process Section: SQA-TL-WMS-003, Section A4



- 1** QCD Meeting with NC Suppliers Records and Local Suppliers List updated
PrQS, Purchase and Storage
- 2** **Everything is OK**
- 3** **Actions:**USM Manages the dedicated action plans
Level of Escalation at sourcing: USM and CM
Level of Escalation at supplier: Local Sales Manager + Group Sales Manager
- 4** **Actions:**USMs and SQD manage the action plan + notification of risk of status "on hold"
Level of Escalation at sourcing: CM and sourcing TLS, VP group and Executive Sales MAnager
Level of Escalation at supplier: Group of executive sales manager
- 5** **Actions:**"On hold" or "To eliminate" for all PL
Level of Escalation at sourcing: Sourcing SVP
Level of Escalation at supplier: CEO

Details

Action

How to implement

Definitions in Section 2.1 in SQA-TL-WMS-004
TLS Supplier NCR Process Management

Criticality levels in Section 2.2 in SQA-TL-WMS-004
TLS Supplier NCR Process Management

Quality Wall definition in Section 2.3 in SQA-TL-WMS-004
TLS Supplier NCR Process Management

-Top Worst Supplier
-NCR Ratio
-Supplier CONQs
-Rating supplier (**TLS Supplier Quality Escalation Process**)
-Supplier to report

Penalties and CONS1/S2 in Section 2.6 in SQA-TL-WMS-004
TLS Supplier NCR Process Management

Non-Conformance detection (internal or external supplier)
Incoming inspection, industrial, QSRW, SQA, project.

1

Write a NCR
Warehouse Manager/Operations/PrQS Manager/Engineering

2

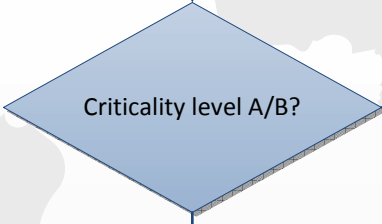
Evaluate the NCR criticality
PrQS Manager

3

Communicate the NCR to the supplier
SQA Manager

4

Protect the customer/Operations and Implement Containment Action
SQA Manager



5

Manage problems solving with supplier (Actions Plans)
SQA Manager

6

7

8

9

Conduct monthly QCD review with sourcing & Supply Chain Review
Unit Sourcing Manager/SQA Manager

1

NCR Form

- Number of defective parts
- Descriptions and pictures of the defect
- Criticality level and CONQ amount collected
- Root causes analysis and correctives plans required
- Incoming Inspection

2

NCR Form with the criticality level

3

- Supplier NCR (and NCE) communication is managed by SQA/Quality Team, Standard NCR form reference: **SQA-TL-FRM-005 [A2]**.
- For all sites no using Railsys QM, a deviation is accepted to use local NCR form until QM implementation.

4

Send the NCR to supplier with defect description, photos and in parallel organise the containment actions.

When a NCR is created, the containments actions are implemented using Quality Wall method.

Containment actions pilot depends on the criticality level :

- Level A : pilot is SQA
- Level B : pilot is SQA
- Level C : pilot is Incoming Inspection and/or Supply Chain

5

Step 1: Segregate all defective parts and keep at least one defect sample for supplier analysis.

Step 2: Request Root causes analysis and action plan associated through 8D form (for **both causes** of non-detection and causes of creation of the defect). 8D tool is requested mainly for A and B NCR criticality level.

Step 3: Update the number of defective parts (from NCR reports) and the responsibilities if needed.

Step 4: Supplier Actions Plans are managed by SQA, from the Root-Causes analysis to the implementation of relevant actions plans on supplier manufacturing process. Process Audit could be used as validation tool. This management is leading through the reactivity requested in section 2.2.

Step 5: Close NCR report when actions plans efficiency and results have been demonstrated

Supplier Actions Plans (8D, PDCA, QRQC....)
Project has to have acces to PST and training

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Monthly QCD review is a management meeting done locally to review suppliers' performance trends and figures and agreed actions to manage keys suppliers' improvement (Escalation process, 8D, SQD support...). All major figures are provides by Quality, Sourcing, Supply Chain and Technical departments.

QCD basic rules for TLS:

- QCD meetings are managed by Sourcing department.
- Sourcing, Quality & Supply Chain participate (Technical Dept. may be invited too)
- Meetings held monthly (could be adapted regarding local business and sourcing turn-over)
- Key suppliers : LP150, Suppliers represent 80% of the local business and others suppliers depending NCR impact on business

Keys figures for Quality (at minimum):

- Supplier Reactivity to support ALSTOM requirements
- Escalation process proposals
- CONQ S1 and S2 collection
- Suppliers' First Article Inspection issues.
- TOP 5 regarding NCR number and criticality level
- Actions plans reviewing from last QCD meeting

Outcomes of QCD meeting for Quality :

- TOP worst suppliers and official letter taking account Escalation Process (YELLOW, RED, BLACK)
- TOP bests suppliers and official letter to inform suppliers in this case.
- CONQ re-invoiced decision

Score-Card ALSTOM is the tool used for QCD meetings (locals tools could be also used)

7 Score Card

8 Escalation Process SQA-TL-WMS-003 [R1]

9 SCG-WMS-006 [R2]