BUSINESS BLUEPRINT

For

DUKE CORPORATION LTD.

MY SAP ERP IMPLEMENTATION PROJECT

QM - QUALITY MANAGEMENT

Mr.Tushar S.Shitole
QM - Functional Consultant,
ADROIT INFOTECH Pune.

Mr. Anil Mathew
Module Owner,
Duke Corporation Ltd.

Modules to be implemented

No.	Module
1	QM – QUALITY MANAGEMENT
2	PP – PRODUCTION PLANNING
3	SD – SALES & DISTRIBUTION
4	MM – MATERIAL MANAGEMENT
5	FI – FINANCIAL MANAGEMENT
6	CO – CONTROLLING

Contents

1. Introduction

1.1 Purpose of this document

This document is the Business Blueprint for delivering the ''SAP Implementation – Project ATHARVA'' at Duke Corporation. It outlines the business requirements, 'AS-IS' analysis, 'TO-BE' processes and design considerations for the project.

1.2 Who should read this document

This document is meant for MIS Managers, MIS Team leads and Key User champions who will have to have a good understanding of SAP system. This document explains all the specifications that are broadly captured for successfully delivering the project. This is a controlled document and its circulation is left to the discretion of Adroit Infotech and Duke Corporation project sponsors.

1.3 Document Derivation

This document is derived based on the following activities conducted at Duke Corporation Pune, Starting,
1. Discussion with key users
2. Requirements discussion with business Process Owners.

2. Process Description

2.1 Objectives

The objective of this Blueprint Process is to define Quality Management in the system.

2.2 Who created it?

The Quality Management team is responsible for creating these processes:
- Quality Assurance personnel
- Production personnel

2.3 Where is it used?

Quality Management is used in the following areas:
- Production.
- Procurement.
- Dispatch

2.4 Features required

The system should meet all the requirements as per the following guidelines:

- Basic data (for example, material master, catalogs, inspection characteristics, inspection methods and sampling procedures).
- QM in Materials Management (Procurement).
- Recording results.
- Defects recording.
- Quality notifications.

2.5 Responsibility

The following 'Role' (or function) will be directly responsible for executing the Quality Management:

Quality Management. - To be decided by Head of Division
Staffs from above Dept. - To be decided by Head of Division

2.6 Impact on current business process

- Manages quality information for materials, vendors and manufacturers.
- Evaluates vendors on the basis of quality using quality scores from audits, goods receipt inspections, and problem notifications.
- Manages problems using quality notifications and processes complaints against the vendor.
- Manages quality inspections for manufacturing orders.
- Confirms quality and quantity information for manufacturing orders.
- Manages problems in production using quality notifications and by processing corrective tasks.
- Manages problems in sales & distribution with the help of quality notifications and by processing customer complaints.

3. Organization Structure

Organization structure:

Company Code

- Depicted from a tax law, commercial or other financial accounting standpoint
- Corresponds to a legally independent company
- Each company code has exactly one domestic currency, in which you create the balance sheet.

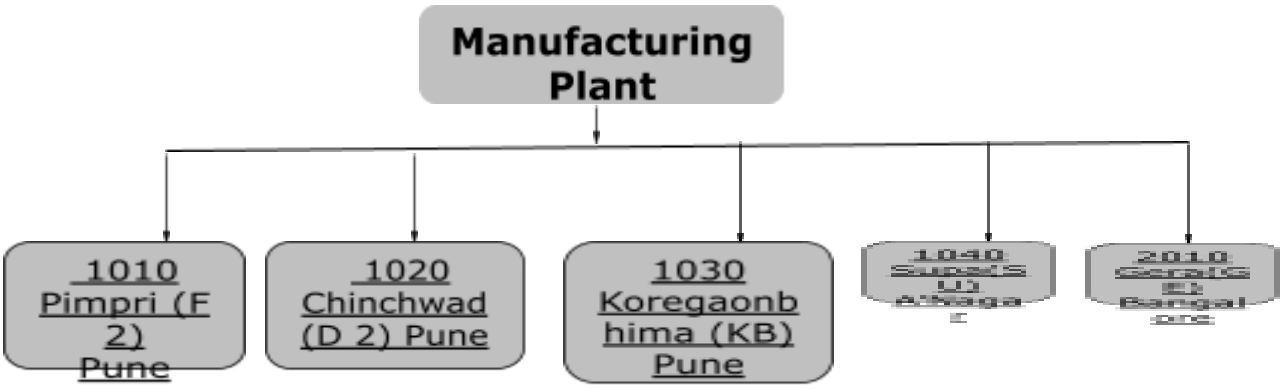
3.1 Logistics Structure-Definition

Plant

- Location that Stocks, Manages, and Valuates Inventory
- May be a Physical Site Manufacturing/Production Lines
- Can be a Physical Location (cost centers may or may not be associated to a plant i.e. administrative vs. manufacturing cost centers)
- A Plant is assigned to a Company.

Logistics Structure – Duke Corporation.

In Duke Corporation, factory will be defined as plant in SAP.



3.2 Quality Management

3.2.1 Quality Management – Definition

The QM application component supports tasks associated with quality planning, quality inspection and quality control. In addition, it controls the creation of quality certificates and manages problems with the help of quality notifications.

3.2.2 Quality Management – Organizational activities

You use the QM component functions for the following quality management work:

Quality planning

- Basic data for Quality Management
- Inspection planning

Quality assurance

- Quality inspection
- Quality certificates

Quality control

- Quality notifications
- QM information system

In addition, it controls the creation of quality certificates and manages problems with the help of quality notifications.

1. 3.2.2 Quality Objectives of Duke Corporation (Pune) Ltd.

1) Reduction of nonconforming products.
2) To improve on time delivery.
3) To enhance customer satisfaction.
4) To improve sales per employee.
5) Production / Productivity 1.5 to 2 time's percentage (%).
6) Cost 20% to 30 %.

2. 3.2.3 Quality Policy of Duke Corporation (Pune) Ltd.

1) Duke Corporation manufacture and supply.
2) To fulfill Customer needs in terms of quality, delivery, cost & development.
3) Enhancing effectiveness of personal and plant equipment safely.

4) To achieve zero defects & maximize profits by continuous improvements through effective Quality Management Systems.
5) Team work, training and focus on action & results.

The QM module is integrated in the following logistical processes in the R/3 system:

- QM in Procurement
- QM in Production
- QM in Sales and Distribution

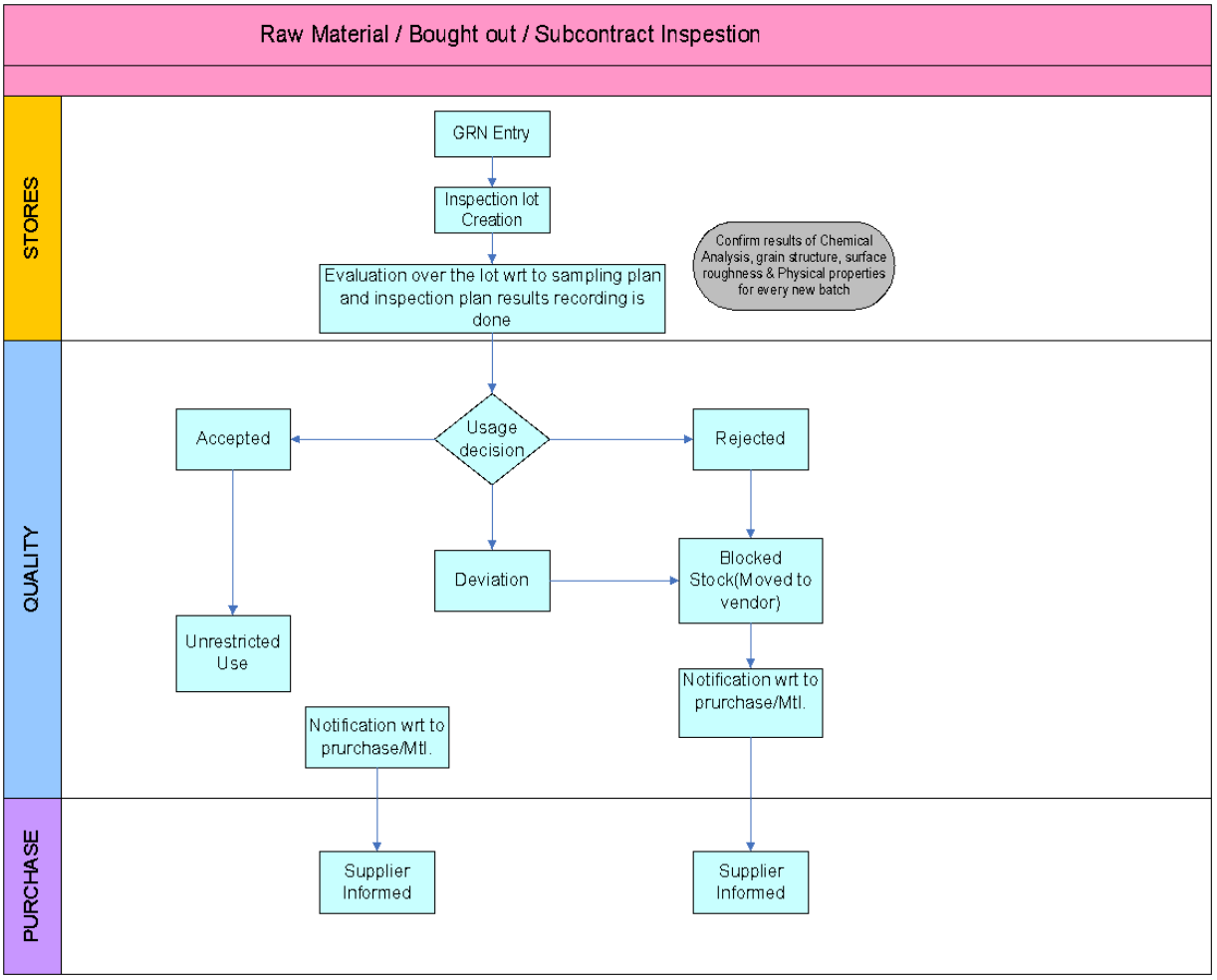
3.2.4 QM in Procurement

Raw material inspection

As Is Process:

- QA Person will get real time information of incoming inspection to be performed.
- Raw Material used is Bar, Pipe, Angle & other indented items.
- RM is received from only Indian suppliers.
- The concerned authority ensures test Certificate of the supplied material before starting the inspection.
- Chemist as per RM specification does RM inspection.
- Raw Materials like Bar, Pipe, Angle inspected for following points.
- Chemical properties like heat no., harden ability, the RM is checked.
- Following visual inspection of raw material is done,
  a) Bend,dent,mark,crack,deep die mark.
  b) Rust, Seam cracks & other visual defects.
  Dimensions specified in incoming raw material specifications.
  Incase material meets specification, material will be accepted, in case material is not meeting the specification, lot will be posted as rejection after results recording and raw material will be moved for return delivery.
- All other indented item are inspected by the user himself.
- Every RM is accompanied by a Mill Test Certificate.
- RM is procured as per Duke Corporation. specifications.

SAP Process:



- Raw material inspection is done for the characteristics mentioned in the material specification. Raw material inspection settings are maintained in the material master. When a GR is made for an incoming product, raw material inspection lot is generated. In this lot, a set of results are recorded and attached to every operation where QA is involved.
- Chemical analysis and physical properties report is generated for every new batch.
- MTC is received for raw material.
- Until the quality check is done, the material is stored physically at store and once when the lot is accepted for parameters as per the material specification then Quality personnel makes the results recording entry and issues to production through usage decision.

- If the material is not within specification limit then, lot will be posted as rejection after results recording and raw material will be moved to blocked stock, for return delivery.

Improvement Areas

- Inspection Initiation
- Triggers inspection automatically when goods receipt is posted.
- Holds all the stock into Quality stock until they are cleared from QM.
- Inspection becomes mandatory and QM users are the only authorized person to move the material from stores to production.
- Non-stop data collection.
- Both Variable & Attribute inspection is possible.
- If any defects are there in the inspection lot, it is recorded & appropriate notification is raised to concerned department to take preventive measures.
- For consistent good quality, inspection is automatically skipped.
- Based on current quality level inspection severity is changed.

3.2.5 QM in Production

In process Inspection

As Is Process:

- Supervisor/operator will get real time information of in process inspection to be performed.

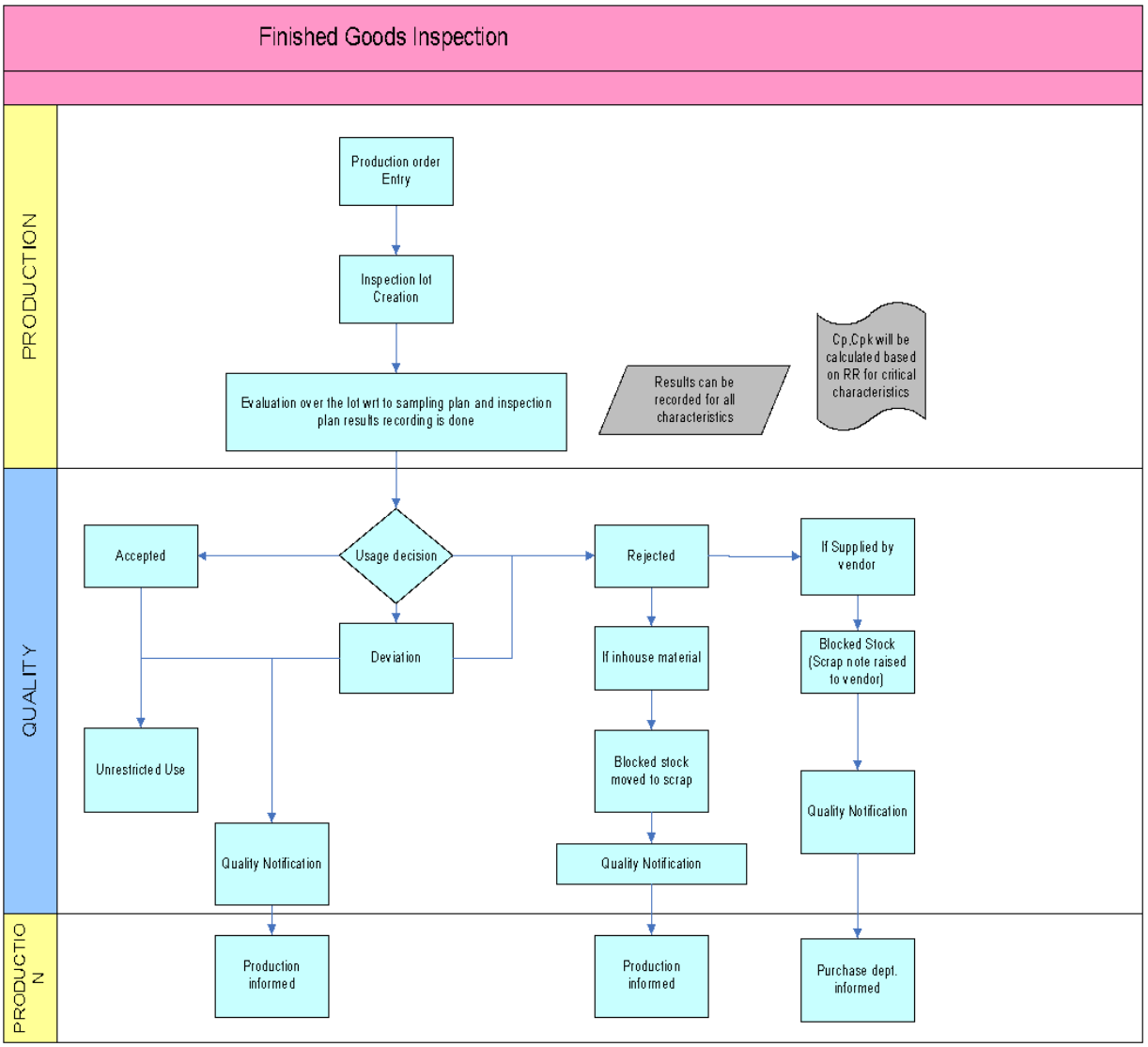
- For all products 100 % visual in-process inspection done for checking as per the instruction for that product from visual inspection plan by the job setter & job inspector.

SAP PROCESS:

- All visual inspection processes will be shown as an activity in production routing and the same would be confirmed for quantities.

Final Inspection

SAP PROCESS:



- Quality Control personnel receive information from production for audit of a lot through production order
- Once when the lot is accepted for all parameters Quality personnel makes the results recording entry and issues to FG storage location through usage decision.
- Until the quality check is done, the Product (Pins, Bushes etc.) not allowed for packaging.
- Until the quality check is done, the FG material is stored physically at stores and once when the lot is accepted for all sampling parameters as per the sampling plan then Quality personnel makes the results recording entry and issues the material through usage decision for packaging.

Improvement Areas:

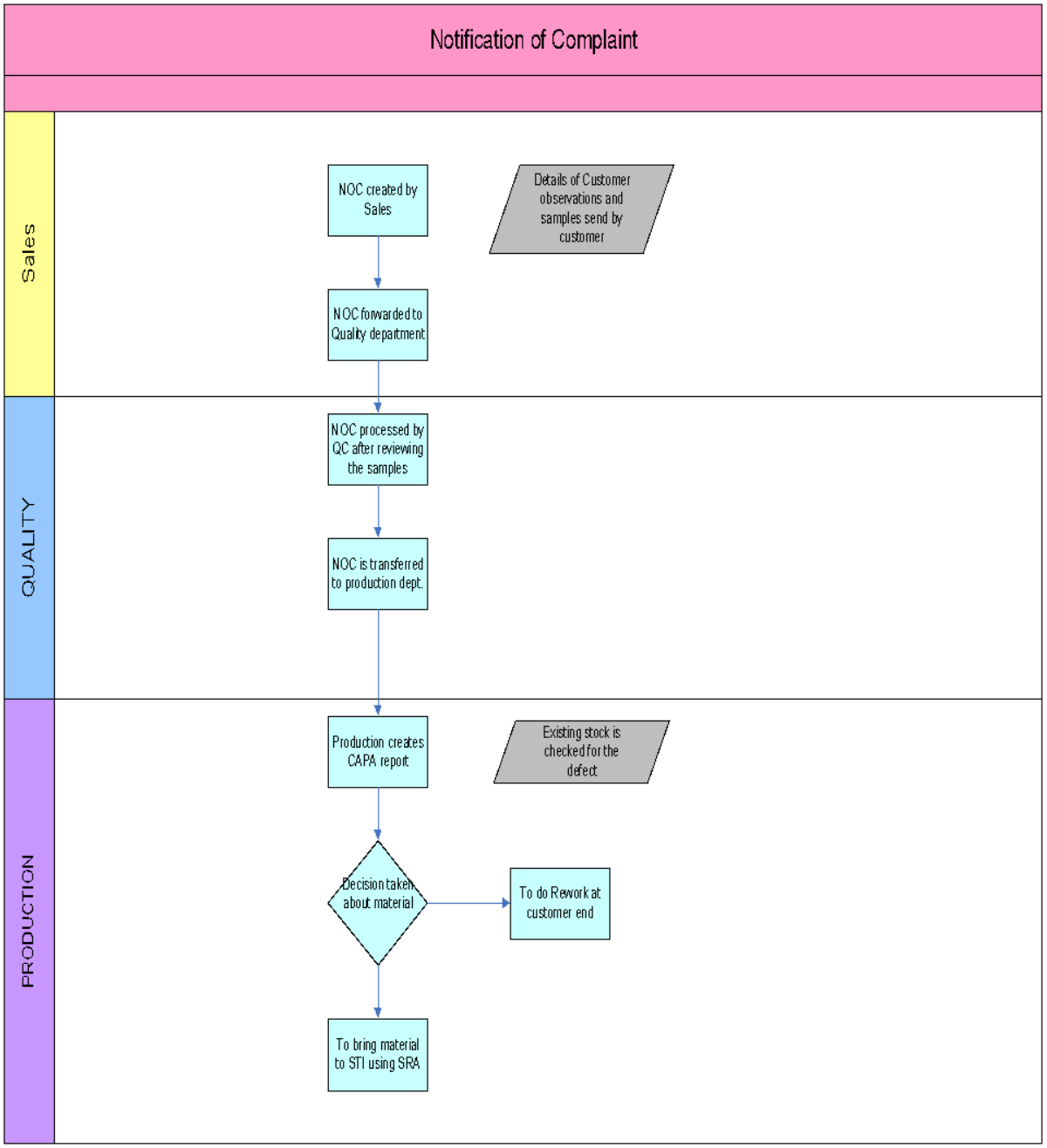
- Automatically quality certificate is printed along with Delivery documents.
- Inspection lot is triggered again if the material is in FGW for more than one year and a PDI is issued along with the WTC to the customer.
- Traces back the problems to raw material.
- Holds all the stock into Quality stock and does not allows for invoicing until they are cleared by QM personnel.
- Inspection becomes mandatory and QM personnel are the only authorized person to move the material for invoicing stock.
- Non-stop data collection.
- Both Variable & Attribute inspection is possible.
- If any defects are there in the inspection lot, it is recorded & appropriate notification is raised to production department / purchase department to take preventive measures.
- Partial quantity inspection helps in different analysis of material with different parameters.
- Production shall be monitored and controlled through SPC techniques and control charts.
- Continuous process improvement shall be possible by analyzing the results graphically.

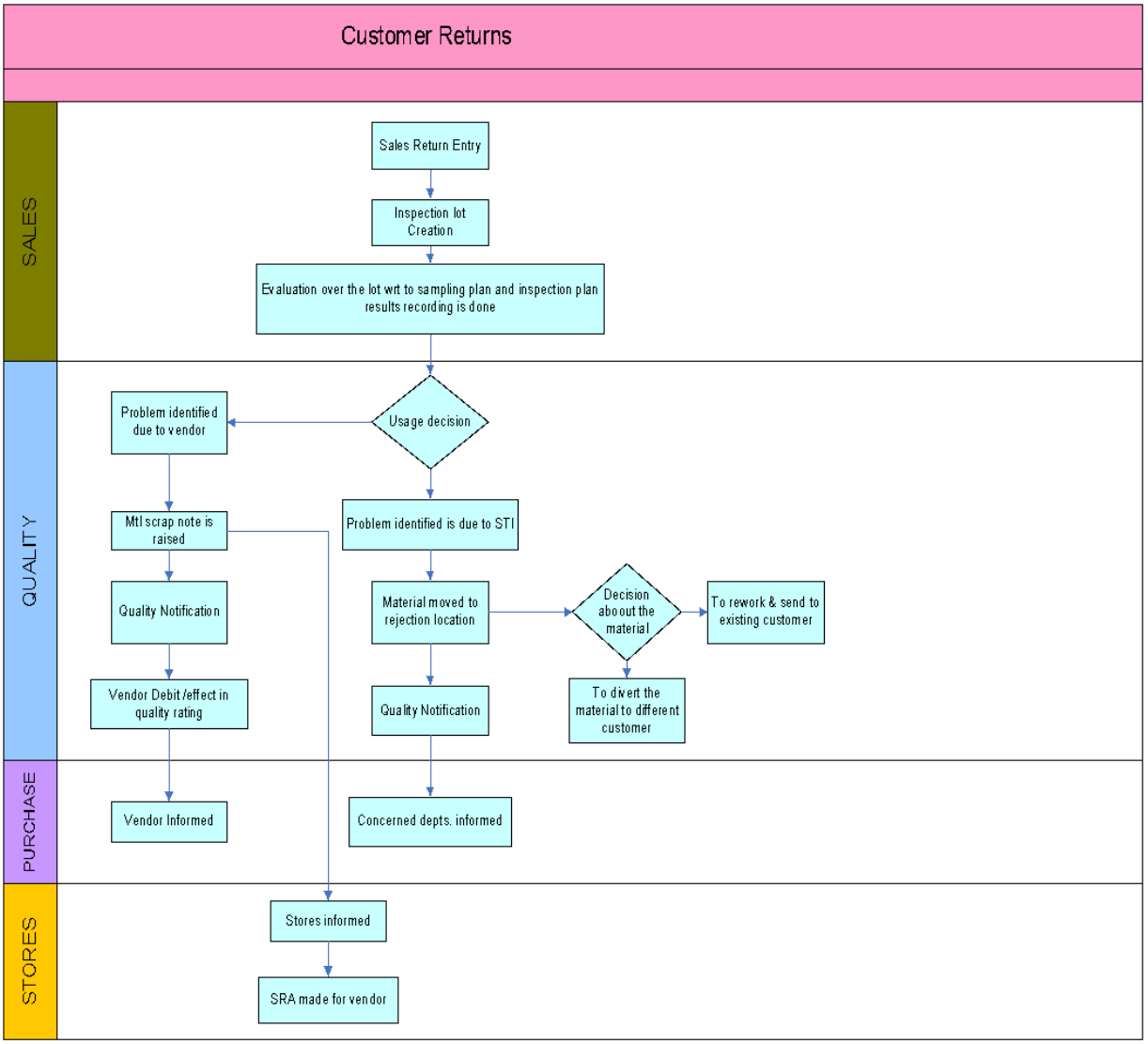
3.2.6 Customer complaint / Customer returns

As Is Process:

- Complaints related to quality come to the Marketing dept. from Customer end along with the samples.
- Notification of Complaint is filled by marketing dept.
- Notification along with Samples is forwarded to QA by marketing.
- QA person gives the Notification along with Samples to respective Production dept.
- Production person will analyze the defect recd. at customer end and will trace out the history of that material.

SAP PROCESS:





- Complaint is received through Sales / Customer Support Dept.
- Customer directly informs the factory QA head
- Sometimes E-mails are received from customer directly
- The complaints are of two types
  1. Technical
  2. Logistics
- Sales return invoice is generated and material is taken under quality stock.
- Complaints are being handed over to concern by QA for analysis.
- Production person with the reference of customer specs. Analyses the defects occurred and give necessary feedback to production personnel

who in turn take immediate actions to avoid those defects getting generated in existing lot.

- If it is possible to rework the material it is done and sent to the customer again. If it not possible then the possibility of diverting the material to other customer is checked.
- Notification is generated by QA department which is to be filled by production.
- Analyzes the root cause for the problem and gives the feed back to the customer in the customer specified format (It is done by production dept. which is approved by QA).
- All customer complaints are registered.
- Handles all customer complaints and traces back the problems to vendors
- Concerned department are informed through Quality notification
- All notifications are saved as life times records for future reference
- After analyzing the root cause, corrective actions initiated are attached to the notification.

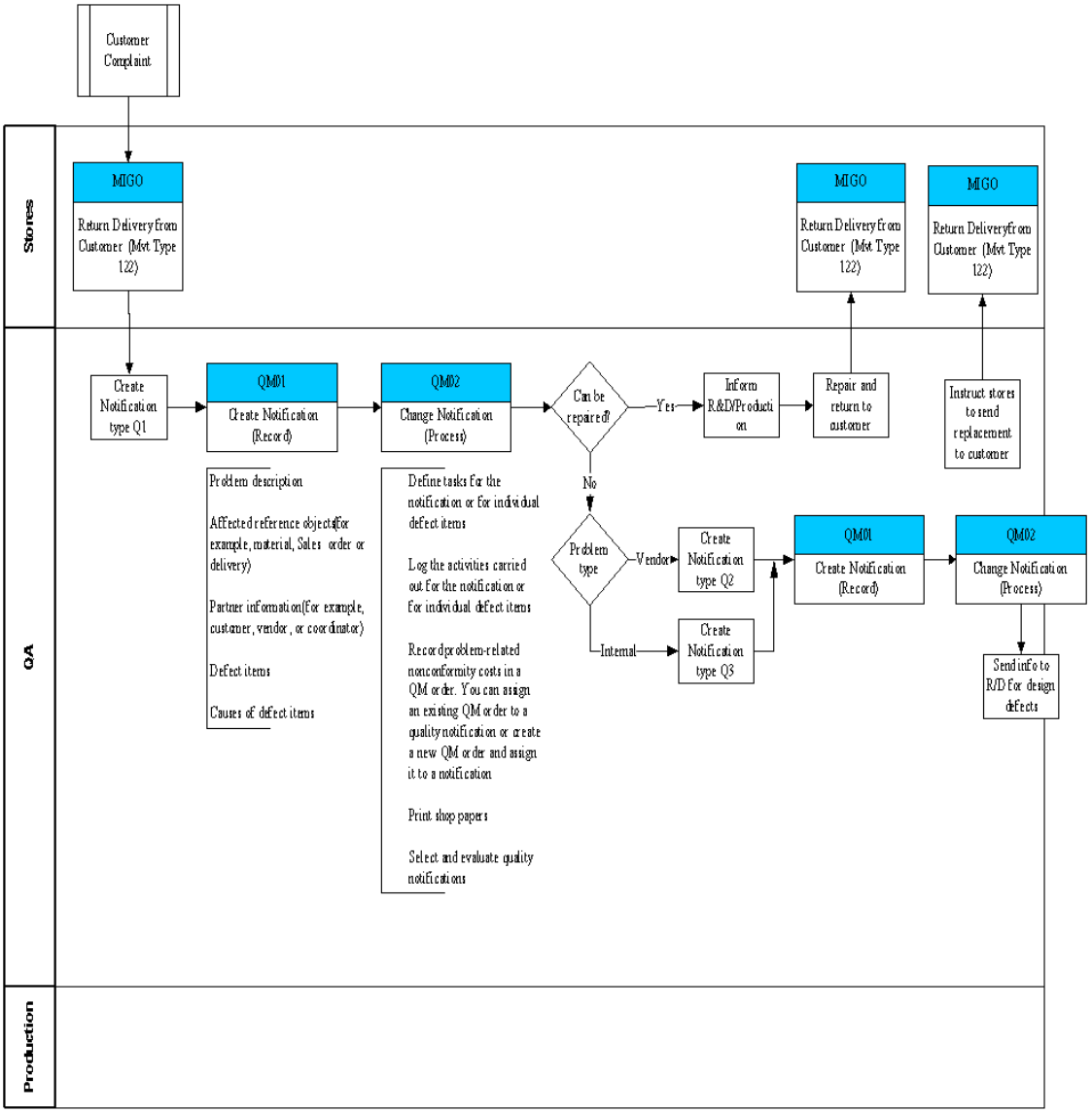
GAP:

- Lot creation to be skipped (if required)
- Tracking for affected invoice to Batch number.
- Following statistics is required w.r.t. NOC -
  a) Customer wise / defect wise.
  b) List of customer concerns repeated more than one time in two months.
  c) Reverse tracking of material from invoice / lot no. to RM no.
  d) Notification raised on concerned dept for respective Complaint Analysis.
  e) Checking WIP & FGW stocks of concerned item & blocking it as "blocked stock".
- SOP updating as per corrective action given through a change note initiation
- Notification to be customized as per AS IS flow charts as per SCBL requirement.
- DAR (Defect analysis report) is sent to the customer against customer complaint.

3.2.7 QM in Sales and Distribution

In the plant QM in Sales and Distribution is not applicable as there is no quality inspection for a delivery. However we won't use a notification for dealing with a problem involving poor-quality or services delivered to a customer.

3.



3.2.8 Calibration

As Is Process:

SAP PROCESS:

Comments: Calibration is a part of PM module.
Though Calibration is a part of PM module, Adroit will try to give the best solution for calibration in SAP.

4.0 Business Process–Requirement

Requirement and expectation

1. New Product Development:
   - Supplier change.
   - Process change (both in-house and vendor).
   - New Machine.

2. Shop floor and Manufacturing Quality:
   - Quality in Material Handling between WC.
   - Final Inspection and Testing.

3. Resource output:
   - Daily Rejection Report (Batch number, quantity, reason).

4. Control of non-conforming products:
   - Components not meeting the standards will be divided as rework and rejected parts.
   - The analysis will be done to find the root cause and pluck the defect out completely.

5.0 Master data in QM:

In QM, the following master records are available:

- Catalog
  - The catalog contains unique, non-numerical data in the system that is defined at client or plant level.
  - You use catalogs to manage, uniformly define, and standardize information. They can help you to record and subsequently evaluate qualitative data, and to describe problems.

- Master Inspection Characteristic

- An inspection characteristic that is created as a master record. This characteristic is intended for frequent use in inspection plans or for evaluation purposes across all inspection plans. Master inspection characteristics are language-independent.
- You use master inspection characteristics in inspection plans, material specifications, and certificate profiles to simplify and standardize data entry.

- Inspection Method
  - You use inspection methods to describe how to carry out an inspection for an inspection characteristic. You can create master inspection methods at plant level to simplify and standardize the inspection planning activities and to standardize the nomenclature. This allows you to plan inspections systematically, uniformly, and economically.
  - Inspection methods are used in:
    - Task lists
    - Master inspection characteristics

- Sampling Procedure
  - A sampling procedure defines the rules that specify how the system calculates the sample size and it contains information about the valuation of an inspection characteristic during results recording (attributive, variable, manual, etc.).
  - Sampling procedures are usually used at characteristic level of a task list or material specification. You can however determine the sample size, without reference to task lists. To do this, you define a sampling procedure for the inspection type in the inspection setup (Quality Management view of the material master), or in Customizing.

- Dynamic Modification Rule
  - The basic data record contains the definition of the inspection stages, the dynamic modification time (at lot creation or after the usage decision has been made), and the conditions for the inspection stage change. Inspection stage changes occur on the basis of the inspection results that are recorded for inspection lots and inspection characteristics (that is, on the basis of their acceptance or rejection).
  - You can vary the inspection scope using dynamic modification rules. You can store a dynamic modification rule in one of the following places:
    - In the inspection plan at the header level
    - In the inspection plan at the characteristic level
    - In the inspection setup of the material master record at the inspection type level

- Sampling Scheme

- A collection of sampling plans. A sampling plan applies to the sample size based on a specific inspection lot quantity and defines the criteria for determining whether and how a sample is accepted or rejected. In the R/3 System, the structure of the sampling plans complies with international standards (for example ISO 2859 and ISO 3951). However, you can also add sampling schemes for different sampling procedures.
- You use a sampling scheme if you want to:
- Determine the sample size on the basis of the lot size, inspection severity, or combination of inspection severity and AQL (actual quality level)
- Store how a decision is made to accept or reject a characteristic
- Determine the number of physical samples, based on the lot size, or the number of containers in an inspection lot in sample management.

- Sample-Drawing Procedure
  - A master data object in which you plan the drawing of physical samples. In the sample-drawing procedure, you specify:

    - Which categories of physical samples must be drawn
    - How many physical samples must drawn
    - The size of each physical sample
    - Whether the drawing of physical samples must be confirmed

  - The system uses the information in the sample-drawing procedure together with the information in the inspection plan to calculate the physical sample sizes, and to create physical-sample records when an inspection lot is created.

Resources:

- A resource is where an operation or activity is carried out within a plant.
- Resources are used in Routing.
- Resource is assigned to a cost center.
- Resource carries in its definition the values which are used for evaluation of operation performed on that resource. For example, setup time, processing time.

Routing:

- A **Routing** is a description of which **operations** (process steps) have to be carried out and in which order to produce a **material** (product). As well as information about the **operations** and the order in which they are carried out, a Routing also contains details about the work centers at which they are carried out.
- The standard values (times) for activities such as setup and processing time can be maintained in Routing.
- The material components are assigned to an operation where they are used during the activity.

6.0 Number ranges:

S/N	ATHARVA	M	Method of Data Transfer
1	Quality Info Record		Internal number range
2	Code group and Selected sets		Internal number range
3	Sampling Procedure		Internal number range
4	Master Inspection Characteristics		Internal number range
5	Quality Plan/Material specification		Internal number range
6	Inspection Method		Internal number range

6.1 File Conversion Considerations

S/N	ATHARVA	M	Method of Data Transfer
1	Quality Info Record	M	BDC
2	Code group and Selected sets	M	BDC
3	Sampling Procedure	M	BDC
4	Master Inspection Characteristics		BDC
5	Quality Plan/Material specification		BDC
6	Inspection Method	M	BDC

Where M = Master Data