CHAPTER

1

Overview of Oracle Quality

This chapter introduces quality management and describes how Oracle Quality can be used to meet its challenges. It also provides an overview of the components of Oracle Quality and illustrates how Oracle Quality can help you meet your quality data collection and analysis requirements. The following topics are included:

- Introduction to Quality Management: page 1 – 2
- Overview: page 1 – 6
- Tracking and Monitoring Quality Results: page 1 – 11
- Quality Business Flow Diagram: page 1 – 15
- Quality Process Flow Diagram: page 1 – 16

Introduction to Quality Management

Companies today operate in global markets that demand near–zero defect quality. High quality is required not just in production, but throughout the supply chain. ISO 9000 certification is a minimum requirement. To remain competitive, companies must respond to the pressures of reducing their costs while improving quality and customer service.

To address these challenges, most companies have implemented quality programs based on the principles and methodologies developed by Drs. Deming and Juran. Such programs have likely evolved over the years starting with the implementation of statistical process control (SPC); the adoption of zero–defect and continuous improvement programs; the acceptance of the total quality control (TQC) process, and a shift to the total quality management (TQM) approach.

Many companies have widespread quality requirements and consequently may have implemented several quality systems to address these requirements. Although these systems may represent a significant investment in quality processes, training, and software, users are often dissatisfied with them for a variety of reasons.

Quality Systems Today

One reason users are dissatisfied is that existing systems can't adapt to frequent changes in products and processes. Competitive pressures have shortened product life cycles. New products are launched frequently and processes must not only rapidly adapt to these changes, but also improve as they adapt.

Many quality systems can't keep up with the pace, largely because most are inflexible. They're "hardcoded" — they do not allow you to change data collection points or to collect new kinds of quality information when products and processes change.

Another typical problem is that quality systems are not always integrated with business systems. More often than not, they're standalone "pocket" databases.

Can you access critical quality data throughout your enterprise and across your supply chain with pocket databases? For example, can you associate the supplier quality data you collected at the receiving dock with the failure data you collected on the factory floor?

Do your systems cause you to collect the same data multiple times? For example, do you collect part number and quantity failed information in your automated test equipment, your shop floor PC–based SPC package, and your work order transactions system?

Maybe your analysis tools are robust, but do your quality engineers seem to spend more time locating and extracting data than they spend actually analyzing it?

Can you really afford the learning curve and ongoing maintenance costs of multiple quality collection and analysis tools?

Obviously processes and systems that are local, non–integrated, and inconsistent create hidden costs and wasted effort.

Oracle Quality Mission

The Oracle Quality mission, simply stated, is to complement and/or replace these divergent systems with an integrated, enterprise wide, flexible solution that meets your diverse quality needs.

Oracle Quality is integrated with the Oracle Applications product suite to provide unified quality data definition, data collection, and data management throughout your enterprise and across your supply and distribution networks.

Oracle Quality's flexible architecture can support a wide variety of business models and can change as rapidly as business demands.

The word complement is important here. Remember that many companies have invested quite a lot in data collection systems, automatic test equipment, statistical analysis tools, etc. Our goal is to make Oracle Quality an open system with a data repository into which you can import data from existing data collection systems and out of which you can export the quality results you have collected.

Quality Data Repository

Oracle Quality helps a company achieve consistent quality reporting by providing a central and accessible repository of quality information. This is a key differentiator between Oracle and other quality systems. Many other quality systems are non–integrated point solutions.

With other systems, it is nearly impossible to analyze quality data across your enterprise — data integrity is not assured and database administration can be inconsistent.

Oracle Quality ensures data integrity by validating data as it is collected. For example, if you are collecting quality results for an item, the system verifies that the item exists in the Oracle Inventory item master. Similarly, the system verifies that suppliers and customers exist in Oracle Purchasing and Oracle Order Entry as you collect supplier and customer data. Such data integrity does not exist in a quality database that is not integrated with your key business systems.

ISO 9000 Compliance

Oracle Quality lets you collect your company's quality information and procedures to make ISO certification faster, simpler and more effective. ISO 9000 is *not* industry specific and is *not* an evaluation of a specific product or service.

It's an evaluation of the consistency in execution and maintenance of internal operation procedures that directly affect a company's ability to produce high quality products and services.

ISO 9000 requires that you fully document your business processes that ensure high quality product and service. You must then prove that you do what you've documented.

Oracle Quality helps you document and track product and process defects, non–conformances problems, and general quality issues. You can determine what quality data to collect, track, and report using user–definable collection plans. For example, you can collect quantitative information, such as defective quantities or measurements, or qualitative information, such as critical test results and defect cause codes. You can document what defects occurred, what you did with the nonconforming material, and what corrective action you took. In addition, you can attach your ISO 9000 documentation and standard operating procedures to your collection plans so that users can access these documents on–line while they're collecting quality data.

Total Quality Management

By making quality data collection a part of your standard workflow, you can distribute quality assurance responsibilities throughout your enterprise.

The most effective quality management system is one in which people in each functional area are able to define the critical quality data to collect, to take responsibility for collecting this data, and to produce meaningful output to track progress towards their quality goals.

Oracle Quality is a enterprise–wide repository for gathering and storing quality information. It helps enforce quality control and maximizes your quality tracking efficiency by integrating directly with Oracle Applications data and transactions.

Oracle Quality accommodates dynamic business needs by letting you control when and where to collect data in your supply chain. Oracle Quality's flexible architecture easily adapts to support your ever–changing TQM requirements.

Overview

Oracle Quality is an integrated quality management application designed to support manufacturers in the pursuit of total quality management (TQM), zero defects, continuous process improvement (CPI), and ISO 9000 certification. It is designed to support the diverse data collection needs of discrete, repetitive, assemble–to–order, and batch process manufacturers. Oracle Quality helps you manage and distribute critical quality information throughout your organization.

Oracle Quality can help do all of the following:

- establish quality standards for products and processes throughout the enterprise
- monitor performance relative to established quality standards
- identify and track process factors that are affecting product quality
- collect information about product defects, their causes, and their related dispositions
- ensure that test and inspection instructions are available at the appropriate steps throughout the supply chain for a given product
- ensure that the proper tests are performed at the right time and document all test results
- alert the appropriate personnel when products do not conform to standards
- provide flexible reporting on all aspects of quality management
- maintain a shared enterprise–wide repository of quality results

Collection Elements

Collection elements in Oracle Quality determine what data to collect and report. You can define an unlimited number of collection elements for attributes such as *defect*, *disposition*, *severity*, *cause*, *pass/fail results*, or for variables such as *voltage*, *resistance*, *temperature*, or *acidity*. For each collection element, you can specify a list of acceptable values or specification limits such as target value and upper and lower limits.

See Also

Overview of Collection Elements: page 3 – 2

Specifications

Specification describe the requirements of a product. In Oracle Quality, you can define specification limits for key characteristics of the products you produce or material you receive from suppliers.

You can create item specifications by assigning a group of collection elements and their specification limits to items or categories of items. You can also create supplier specifications for items you receive from specific suppliers. Finally, you can create customer specifications specific to the product standards expected by customers. These three types of specifications help ensure that the goods you produce conform to your quality engineering standards and to your customers' quality standards.

See Also

Overview of Specifications: page 4 – 2

Collection Plans

Collection plan are similar to test or inspection plans. Collection plans define the specific collection elements that you want to collect and report on for a particular business case. Within each collection plan, you specify collection elements such as defect types, symptoms, causes, actions, critical measurements, or environmental characteristics, as well as other reference information like item, lot and serial number, operation, department, subinventory, supplier and customer. You can also choose actions to take — for example, electronic mail notifications — based on the quality results you enter for each collection element.

See Also

Overview of Collection Plans: page 0 – 2

Actions and Alerts

You can designate actions to be taken based on the results of quality data collection. You can generate alerts and electronic notifications, as well as place jobs, repetitive schedules, items, suppliers, and purchase order lines on hold.

For example, you can send an electronic mail notification to a given user or group of users, or put a job on hold when a critical measurement is outside the upper and lower specification limits. You can define action rules and related actions for any collection element. You can copy the rules and actions defined for a collection element to any collection plan containing the collection element.

Data Collection Options

You can enter results into the quality data repository by:

- entering quality results directly
  - See: Entering Quality Results Directly: page 6 – 10.
- collecting entering quality results as you transact

  See:
  - Entering Quality Results Associated with Move Transactions: page 7 – 11.
  - Entering Quality Data for Receiving Transactions: page 8 – 8
  - Entering Quality Data for Receiving Inspections: page 8 – 11
  - Entering Quality Data for Service Requests: page 9 – 9
- importing quality results from external sources using the Collection Import.
  - See: Overview of Collection Import: page 6 – 24

You can enter quality results directly at any time. For example, a quality engineer can enter lot sampling results for a collection plan independent of the operator who enters the job completion transaction.

The quality engineer can also query and update the quality results that the operator initiated.

If you collect quality data as you transact, you can optionally define quality collection triggers to determine which collection plan to use for a given transaction. For example, you can indicate that you want to use a collection plan called First Pass Yield when entering move transactions for a particular assembly item. Thus, you can control when and where in the transaction process to collect quality data. By making quality data collection a part of the standard workflow, you can distribute quality assurance responsibilities throughout your organization.

You can use Collection Import to import quality data from external systems into the quality data repository. For example, you can import data from sources such as test equipment and gauges. Imported data is validated according to validation rules of the collection plan. Invalid entries are marked so that you can correct and resubmit them. This maintains the integrity of the quality data repository by rejecting invalid item numbers, supplier numbers, and defect codes. The actions that you defined in the collection plan, such as electronic mail notifications, are triggered based on the incoming data.

Querying, Reporting, and Exporting Data

Oracle Quality provides you with powerful inquiries that enable you to quickly find quality results. You can define your own selection criteria. For example, you can view failure results that are specific to item A54888 and that occurred at operation 10 during May of last year.

You can view quality results using on–line, ad hoc queries and through printed reports. You can also chart your results using trend charts, Pareto charts, control charts, and histograms. If you have purchased Statware's Statit and implemented the integration between Oracle Quality and Statit, you can view charts and descriptive statistic views using Statit's powerful graphical capabilities. See: Integrating Oracle Quality and Statware: page 10 – 2.

You can save the settings you use to create charts, descriptive statistic views, and custom reports. For example, you can create a Pareto chart that graphically illustrates the top failures for all assemblies on a specific production line. You can then save the settings for this chart. Later, after collecting additional data about failures occurring on this production line, you can re–chart your results.

Furthermore, you can copy the settings that you save for a (source) chart, descriptive statistic view, or custom report to a destination chart, descriptive statistic view, or custom report. Copying setting in this manner allows you to view the same subset of data in different ways. See: Copy Settings: page 10 – 4.

You can export information for further analysis. You can also access data directly from the quality data repository with products such as Oracle Discoverer / 2000 and Oracle Developer / 2000 as well as other data inquiry products which can select data from Oracle databases. Direct database access is facilitated by database views. See: Exporting Quality Results: page 10 – 47 and Collection Plan and Import Results Database Views: page 5 – 6.

Tracking and Monitoring Quality Results

You can use Oracle Quality to track and monitor quality results. You can, for example use Oracle Quality to do all of the following:

- Tracking First Article Inspection Defects: page 1 – 11
- Tracking Serial Controlled Items: page 1 – 11
- Tracking Lot Controlled Items: page 1 – 12
- Analyzing Product Defects Using Charts and Reports: page 1 – 13

Tracking First Article Inspection Defects

You can use Oracle Quality to track quality results from first article inspections. If you are only interested in knowing that a part is defective and the date that it was determined to be defective, you can create your collection plan accordingly. If you choose, you can create an alert action that sends the buyer of a part an electronic mail notification each time one of their parts is found to be defective.

Tracking Serial Controlled Items

You can monitor serial controlled assemblies, subassemblies, and components by creating and using collection plans to do the following:

- record quality characteristics about serialized units received from suppliers
- record movement, inspection, test results and disposition of serialized items throughout the production process
- maintain a history of inspection and test results for a particular serialized unit including the most current recorded activity or location in work in process
- record serial number genealogy by recording the relationship between two serialized units; for example, record an assembly serial number and a component serial number
- record the shipment of a serial controlled assembly and the customer site it was shipped to
- record DOA (dead–on–arrival) details for a serialized unit when it is reported as failed at a customer site
- record RMA (return material authorization) details upon notification of a defective, serialized unit; these details can be

queried for receiving approval on the dock of your service organization or depot repair center

For example, you can create a collection plan that is used to collect component item, serial number, test date, test type, and test result data. You can then query to find all results that are related to a specific serial number.

See: Viewing Quality Results by Serial Number: page 10 – 40

Tracking Lot Controlled Items

You can monitor lot controlled assemblies, subassemblies, and components by creating and using collection plans to:

- record quality characteristics about lots received from suppliers
- track lots through production and record where a lot has been
- track lot genealogy by recording the relationship between two lots; for example, record a lot and the base lot it originated from
- record end lot quality characteristics during or after production
- record a lot and the customer it was shipped to

See: Viewing Quality Results by Lot Number: page 10 – 38

Analyzing Product Defects Using Charts and Reports

You can create a variety of charts using Oracle Quality. You can also create custom reports.

Pareto Charts

You can summarize and chart product defects using Pareto's law to focus on the most often occurring defects. For example, you can create a Product Defects collection plan containing collection elements like defect code and quantity defective, as well as reference information collection elements like item, department, and supplier. You can use this collection plan to collect detailed results for each failed inspection. Once results are collected, you can create a Pareto chart showing the quantity of failed inspections by defect code, department, item category, and so on. See: Pareto Charts: page 10 – 11.

Histograms

You can use histogram to provide a graphic summary of variation in a set of data. Histograms are useful in the study of process capability because they graphically display the shape, location, and scatter of quality results data. See: Histograms: page 10 – 15.

Trend Charts

You can use trend charts to analyze data collected over a period of time. For example, you can create a Glazing Process collection plan to collect process quality variables such as oven temperature and voltage from a glazing process. You can use this collection plan to record five readings at random times during each shift. Once the results are collected, you can create a trend chart to graphically display the results of temperature or voltage. See: Trend Charts: page 10 – 19.

Control Charts

You can use control charts to determine whether process stability has been upset by special or assignable causes. You can create the following types of control charts in Oracle Quality:

- Xbar and R charts (*XBar R)*
- Individual X and Moving Range charts (*XmR)*
- Xbar and S charts (*XBar S*)

See: Control Charts: page 10 – 25.

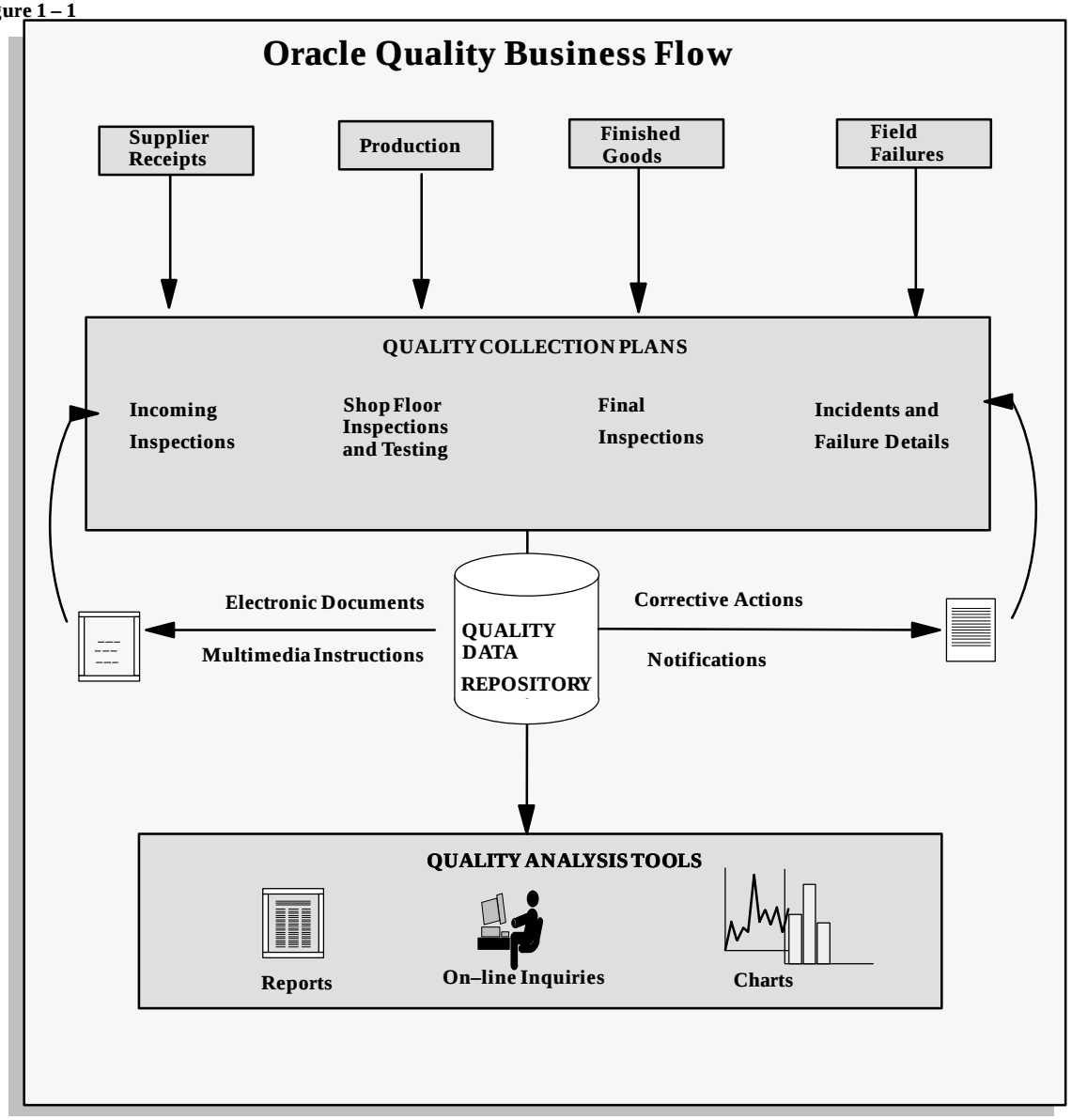
Custom Reports

Using the Quality Results ReportWriter, you can create a variety of custom reports to list and summarize results. For example, if you have created and collected results using a collection plan that contains collection elements like item, job, job quantity, quantity completed, quantity scrapped, and inspection results, you can create a report that summarizes your inspection results as well as a report that uses these same results to show yield (quantity complete versus job quantity) by job, by item, or by item category. See: Using the Quality Results ReportWriter: page 10 – 42.

Quality Business Flow Diagram

The following diagram illustrates the flow of quality information within a business using Oracle Quality:

Figure 1 – 1



Quality Process Flow Diagram

The entire process of defining data collection components, collecting, reporting, and analyzing data can be summarized by the following diagram:

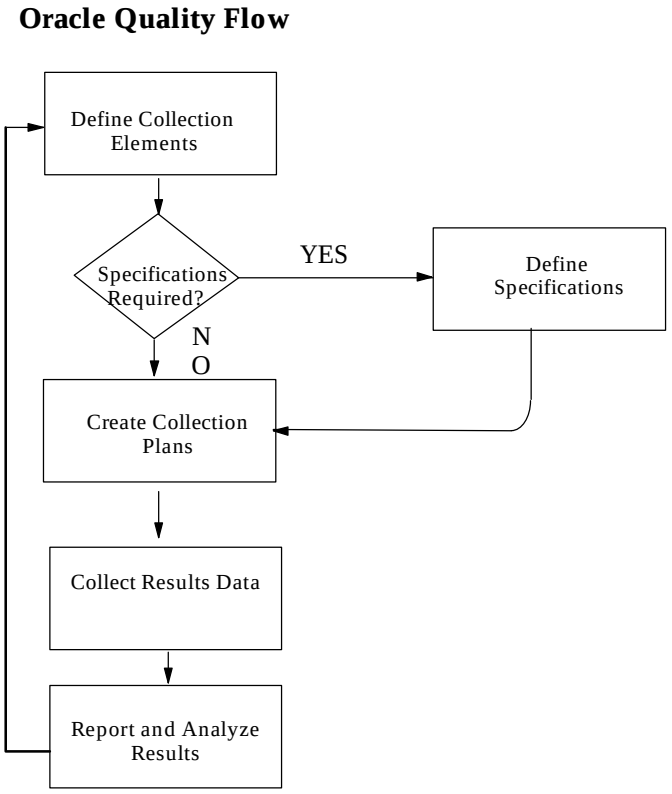



Figure 1 – 2