ILP PROGRAM - ORACLE APPLICATIONS

Tata Consultancy Services

Functional Architecture Study Guide

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How to use this manual

Video1: Script: Vid1-Introduction to the chapter and its content – Face recording.

This vide will introduce the material covered in this pdf, the goals,

1. How this document is organized
2. What is the purpose of this document
3. What will you achieve after going through the document and related videos
4. How to read this document
5. How does it relate to the work you will be doing on real project
6. Reference to other reading materials for further references

This manual has been organized as a step by step guide to teach how to create reports using Oracle Developer Suite 10G. The target audience is new comes to Oracle Developer suite. It assumes that the reader has basic knowledge of Oracle concepts and PL/SQL. After completing this course, you will be able to crate variety of reports using Oracle Developer Suite 10G.

This manual is organized to be read in a serial fashion and follow the instructions given in the document as it is. Practical examples are given in each section to guide you through every step. The tables referred here are common (shared) tables used by different batches, so care should be taken not to delete or update the rows which does not belong to you, this may create problem for the other batches. At the end of the course, you should delete the data you have created.

There are several symbols used to designate particular sections, which are described below:

- Describes the purpose of the section.

- Notes relevent to the scetion above

- This denotes the task to be completed by the audience on his own PC. The layout of the output has to be followed as it is. For any confusion, the faculty shoul dbe contacted.

R11/R12 Differences in Functionality:

The following lists the difference between 11i and R12 in terms of functionality:

1. Oracle e-Business Suite <u>11i is Forms – Based</u> whereas Oracle e-Business Suite <u>R12 is Forms – Based and HTML Based</u>.

2. In 11i <u>Legal Entity , Operating Unit , Set of Books</u> are all <u>defined in HRMS Module</u> whereas in R12 <u>Legal Entity, Operating Unit , Set of Books</u> are all <u>defined in Accounting Setup Manager</u>

3. Oracle e-Business Suite 11i had a concept called Set of Books whereas Oracle e-Business Suite R12 introduced a concept called Ledger.

4. Oracle e-Business 11i introduced 3 C's – Calendar , Chart of Accounts , Currency whereas Oracle e-Business R12 further added an additional element to the 3 C's – Calendar , Chart of Accounts , Currency , Conventions (Accounting Method)

5. In 11i Operating Units were assigned to Set of Books whereas in R12 Operating Units are assigned to a Primary Ledger in an Accounting Setup. Oracle e-Business Suite had Global Accounting Engine whereas Oracle Business Suite R12 had Subledger Accounting Method (SLAM)

6. 11i was completed developed using Oracle Developer Suite (Forms & Reports) 6i whereas R12 was developed using Oracle Developer Suite 10g.

7. 11i had Intercompany Accounts whereas R12 had Intercompany Balancing.

8. 11i uses JInitiator as the default plugin whereas R12 replaces JInitiator with Sun Java Plugin.

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Multi – Org Concept

Oracle e-Business Suite is a complete automated application and is catered to meet the needs of variety of industries. It has an architecture called Multi – Org or Multiple Organization. Whenever we talk about any organization irrespective of its structure single or multiple, we will find certain common things or features or to put it in short we can even call them departments. It is not necessary that every organization has every department but some departments and/or processes are more or less the same.

What is an Organization?

In Oracle e-Business Suite an Organization can be a Legal Entity or an inventory or a Department. Anything can be treated as organization in Oracle. In our daily routine normally we say the word 'Organization' certainly as a Company. For example IBM, HP, Airtel are examples of organization selling their own services. But in Oracle Multi – Org structure are referred to as Legal Entities.

The Multi – Org structure in Oracle consists of following organizations:

- Business Group
- Ledger
- Legal Entity or GRE
- Operating Unit
- Inventory Organization

A Business Group is the top – level in Multi – Org structure. Oracle Applications take into view Human Resources Module as the basis for any business. A Human Resource is purchasing raw materials for Production, a Human Resource is generates Accounting and Financial statement.

In Oracle e-Business Suite Business Group holds Employee Information.

A Ledger is an Accounting Book.

Take an example of a utility shop with an old man sitting with a big register book. In that register he notes every transaction related to money or finances. Let's say he sells some bottles of mineral water to a person. He notes the Date of the Transaction, the amount involved in that transaction, person's name, particulars of goods sold to that person.

There are 4 C's concepts in a Ledger:

- Chart of Accounts (Particulars of Goods)
- Currency (Amount)
- Calendar (Date)
- Subledger Accounting Convention (Cash/Accrual)

Oracle General Ledger resides at this level.

A Legal Entity definition by book is any company which is reporting to Government. In Oracle e-Business Suite a company is also referred to as GRE – Government Reporting Entity. A Legal Entity has a disclosure requirement of their annual revenue.

Operating Unit comes under the Ledger. The purpose of an operating unit is to separate subledger transactions. A Legal Entity having different branches in Pakistan can treat each branch as an Operating Unit.

Oracle Payables, Oracle Receivables, Oracle Purchasing resides at Multi – Org level.

Inventory Organization is the last or the lowest level in a Multi – Org structure. Inventory Organization refers to any kind of storage of item, finished goods and raw materials etc. This storage can be a Warehouse, Floors, Cabinets, and Drawers.

Single Org Structure:
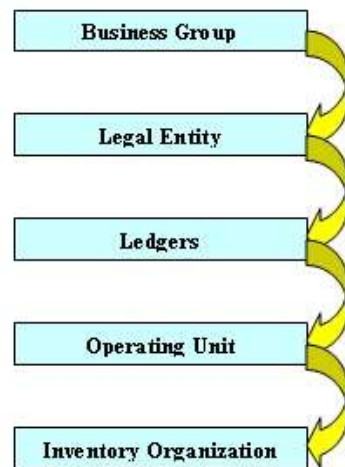
Multiple Org Structure:
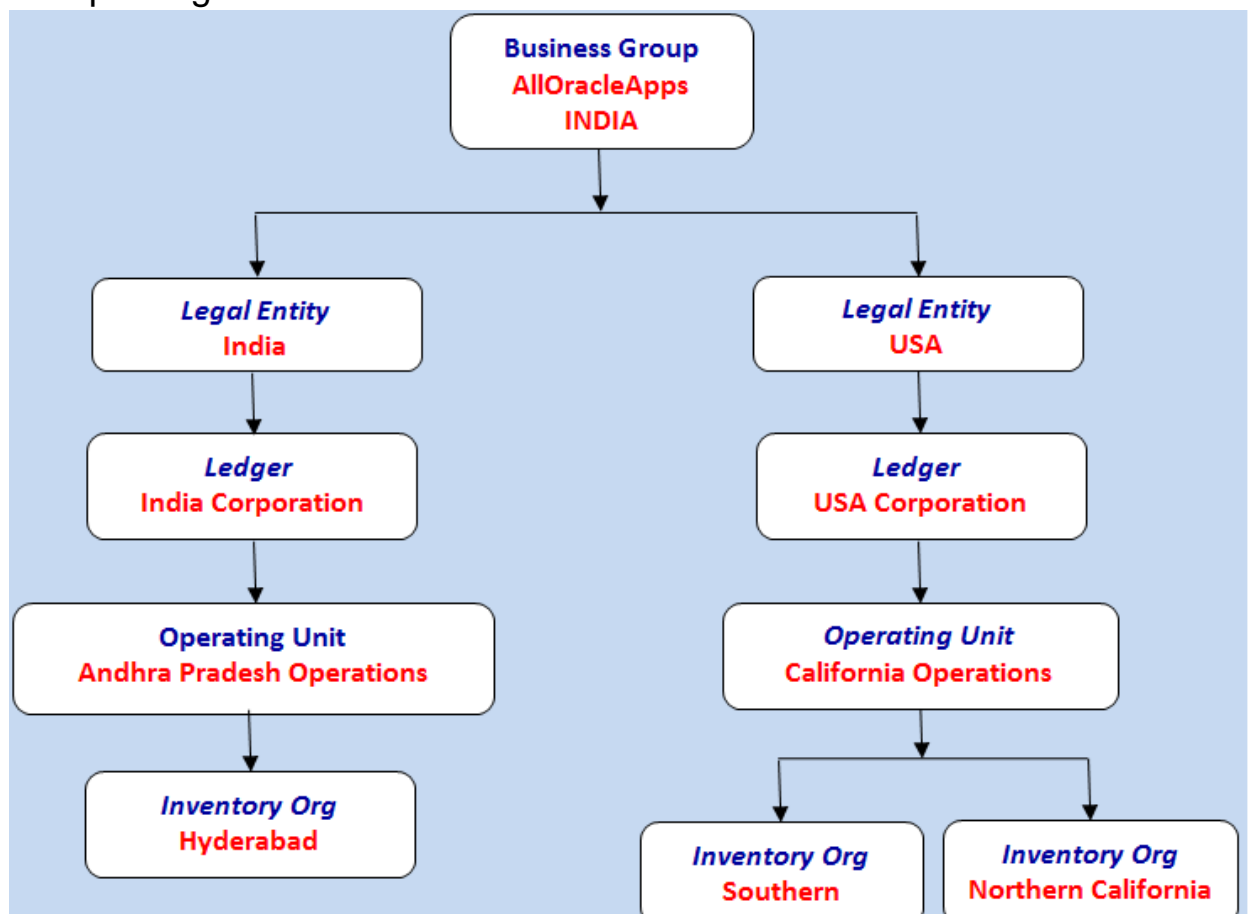
Multiple Reporting Currency:

The Multiple Reporting Currency (MRC) feature allows the organization to report and maintain accounting records at the transaction level in more than one currency. We do this by defining one or more reporting set of books in addition to the primary set of books. In your reporting set of books you maintain records in a currency which is different from the base currency defined in your primary set of books. The primary functional currency is the currency we normally use to record transactions and maintain the accounting data in Oracle Applications. The Functional Currency is generally the currency in which you transactions happen on a day – to – day business. The Reporting Currency is a currency other than the primary functional currency for which you would want to present the data in a different format.

For example:

An Indian based company may have its branches outside of India.

The transactions happening within India would be in Functional Currency and transactions happening outside India would be in Reporting Currency.

Oracle Applications provides support of MRC for the following set of modules:

- Oracle General Ledger
- Oracle Payables
- Oracle Purchasing
- Oracle Receivables
- Oracle Cash Management
- Oracle Projects
- Oracle Assets
- Oracle Costing

The following provides us a summary of steps to be followed to setup Multiple Reporting Currencies:

- Enable or Define Primary Set of Books/Ledger
- Enable or Define Reporting Currencies
- Define Reporting Set of Books/Ledger
- Assign the Reporting Set of Books/Ledger to Primary Set of Books/Ledger
- Define Conversion Options for each module
- Define General Ledger Conversion Rules
- Define Reporting Responsibilities
- Assign Reporting Set of Books/Ledger to Reporting Responsibilities.
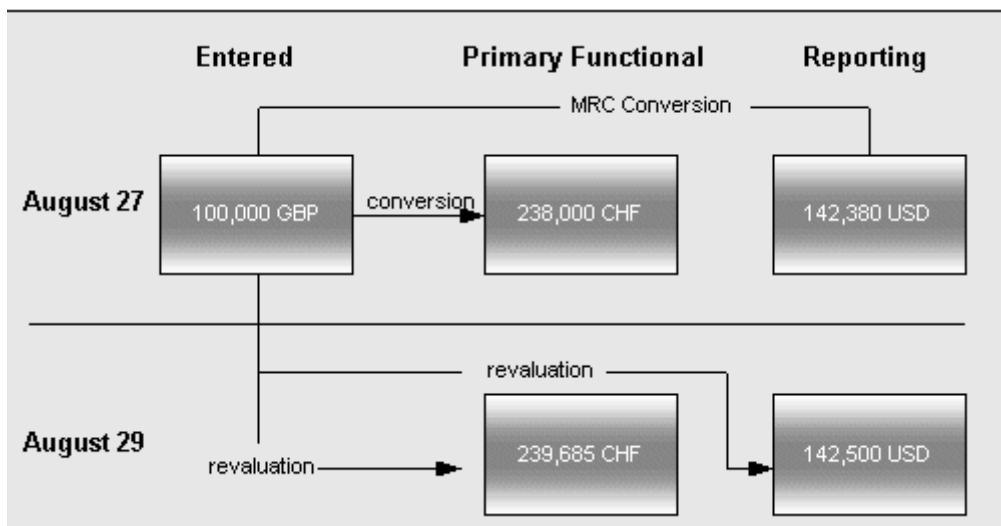
NLS Support:

National Language Support (NLS) is the ability to run an Oracle e-Business Suite instance in any one of the supported languages other than the American English (US).

The Base Language that is the underlying logic for the instance continues to remain American English and which can be changed accordingly.

Multi – Language Support (MLS) is no different from NLS (National Language Support). It is an extension of National Language Support (NLS). Multi-Language Support refers to an ability to run a single instance of Oracle Applications in more than one supported language other than American English.

Multi-Language Support/NLS store the seeded data in both the base language and translated language. Most of the applications/modules integrated with Oracle e-Business Suite are Multi – Language Support enabled.

We can check the base and installed languages in Oracle e-Business Suite by querying the Table FND_LANGUAGES by running the following query:

SELECT language_short_name, installed_flag

FROM fnd_languages;

Our Base Language would be represented with 'B' Flag and other installed flag with 'I' flag.

At the Database Level once NLS/MLS is implemented, Oracle e-Business stores language specific information/attributes in a separate table known as the translation table where the language independent attributes are stored in the base table.

Example of National Language Support (NLS) / Multi – Language Support (MLS) – An Indian based organization having its headquarters in India using the Base Language American English in Oracle e-Business Suite running its day to day business and its branches spread across different countries like Japan, Germany each having its own language installed in Oracle e-Business Suite for running its day to day business.

MOAC:

Multiple Organization Access Control (also referred to as MOAC) in Oracle e-Business Suite R12 is added extension to the concept of Multi – Org concept introduced in 11i. This allows multiple organizations to be defined in a single instance of Oracle Apps and allow users to transact across multiple operating units without changing responsibilities.

Example Tata Group has businesses spread across various verticals like Energy, Appliances, Heavy Machinery etc. can be defined and setup in Oracle e-Business Suite R12 in a single instance. The data related to each of these businesses spread across different verticals can be kept separate and secure by allowing users to only access to Operating Units to which they are granted access to. Consider a scenario where a business group has multiple operating units defined in a given legal entity. To enter an invoice for a given operating unit in 11i the user would have to switch responsibility to create invoices for another operating unit. However in R12 due to MOAC feature the user is given access to a specific set of operating units for a given responsibility so that the user can directly create invoices for different operating units by selecting the required operating units from the List of Values (LOV) in the invoices form.

The multi – org access control feature also known as "Security by Operating Unit" will enable users to access to secured data in one or more operating units within one responsibility. This feature uses Security Profile concept introduced in 11i HRMS module which allows system administrator to predefine the scope of access privilege as a profile option. The Security Profile may be defined in either Hierarchical or Listing mode which may consist of one or more operating units. The Profile Option "MO: Security Profile" is used to associate predefined security profile to a user's responsibility.
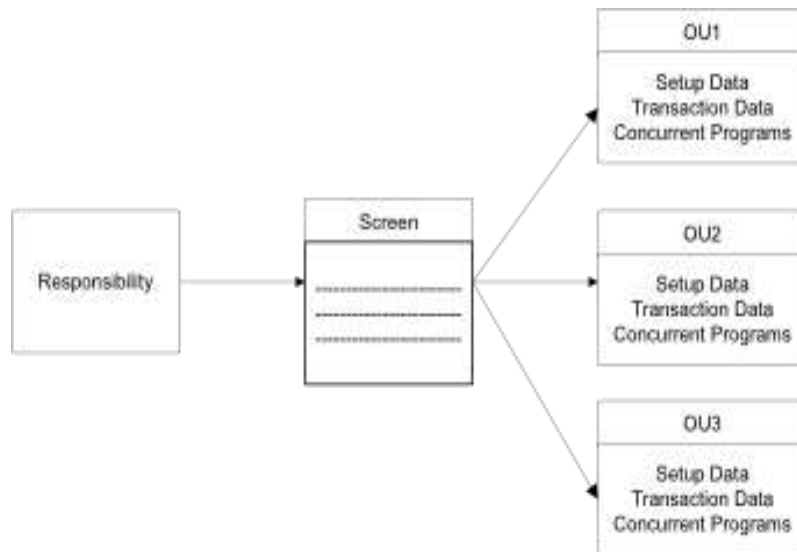
With the ability to access multiple Multi – Org operating units from single responsibility users are able to enter setup and transaction data and run the concurrent programs for multiple operating units without having to switch responsibilities. Except in fewer cases all Multi – Org enabled setup and transaction user interfaces will have Operating Unit field. Users will be able to select the operating unit from the List of Values assigned to the user via the Security Profile and Responsibility.
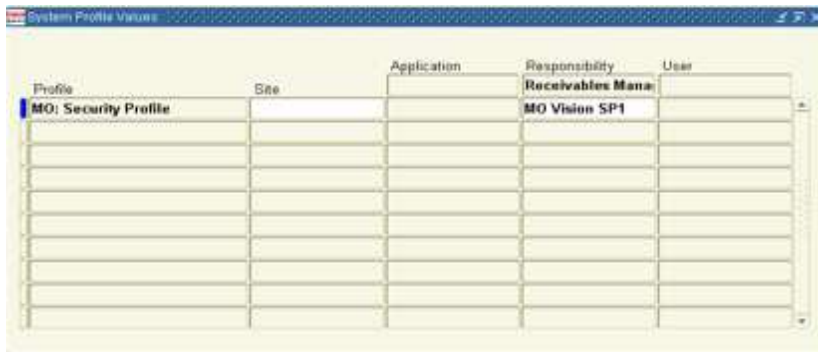
Steps in implementing MOAC:

- Create the Security Profile: Use the screen below to create the Security Profile

- Run the Security List Maintenance Program. This Concurrent program must be run after creating the Security Profile. It populates the PER_ORGANIZATION_LIST table with the list of organizations included in the security profile. The Security List Maintenance Program could be preferably run for one named security profile to prevent disturbing other security profile setup.

- Assign MO: Security Profile to each Responsibility. The last step is to assign a security profile to user responsibility via System Profile Values Form.

Introduction to ERP Modules:

Oracle e-Business Suite is one of the most prominent application packages in ERP systems. It comprises of various modules otherwise known as products or applications. It is not a single application but is a collection of integrated applications. Oracle e-Business Suite comprises of different group of modules:

- Oracle Financials
- Project Management Suite
- Supply Chain and Planning and Management Suite
- Oracle Manufacturing: Discrete and Process Management
- Human Resources Management Suite
- Customer Relationship Management Suite

Video 6 – MOAC

Explain the diagram above – Face recording.

Introduction to P2P Cycle:

Procure to Pay (P2P) is a business process which covers the process of requesting, purchasing, receiving, paying for the goods received and accounting for goods and services. The Procurement Function in a business organization can range from Office supplies to Shop Floor inventory required to manufacture goods for shipment. Procure to Pay (P2P) cycle is one of the most important business process cycles in Oracle e-Business Suite. The process flow is the same across various versions of Oracle e-Business Suite 11i, R12 only with slight variations in options at each version. The P2P Cycle is implemented with the help of various modules.

The Primary Modules involved are:
- Oracle Purchasing
- Oracle Payables

These primary modules are integrated with modules like iProcurement, iSupplier, iExpenses and Payments. Subledger Accounting (SLA) in P2P cycle is used to generate accounting entries for transactions generated in rest of the modules.

Following are the steps involved in a Procure to Pay (P2P) Cycle:

1. A Requestor raises a Requisition Example Mr.Anand working in Sales Department requests for a Color Printer to be installed in his department.
2. This Requisition is forwarded to a Buyer Example Mr.Anand forwards the request to his superior Mr.Rahul.
3. The Buyer approves the requisition and creates an RFQ (Request for Quotation)
4. The Requisition is then forwarded to various vendors in the open market. Example Mr.Anand forwards the Requisition to various Color Printer Dealers like HP, Compaq, Samsung etc.
5. Each vendor in turn sends their Quotation respectively to Mr.Anand
6. Mr.Anand records the quotations in Oracle e-Business Suite and finalizes a particular quotation.
7. He then creates a Purchase Order.
8. The Purchase Order is sent to the Vendor with whom the quotation was finalized
9. The Vendor delivers the goods to the Receiver.

10. The Receiver receives the goods and moves to Inventory/ Warehouse
11. Meanwhile the Supplier sends the Invoice the buyer
12. The Invoice is recorded in Oracle e-Business Suite by the Finance Department.
13. Finance Department then processes the payments
14. Finally the Accounting Entries are transferred to the General Ledger Module.
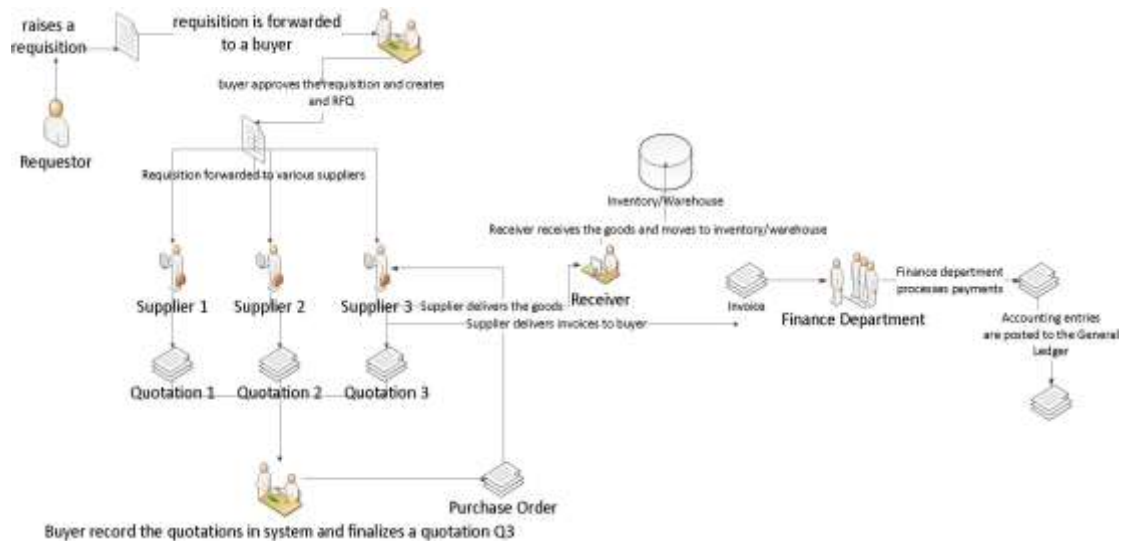
Introduction to Order to Cash Cycle:

Following are the set of processes involved in Order to Cash Cycle (O2C) in Oracle e-Business Suite:
- Enter the Sales Order
- Book the Sales Order
- Launch the Pick Release
- Confirm the Shipment of Goods
- Create an Invoice/Transaction
- Create Receipts either manually or using Autolockbox
- Transfer the Accounting Entries to General Ledger
- Run the Journal Import Program and Post the Journal Entries.

The following modules are involved in O2C Cycle:
- Oracle Order Management
- Oracle Inventory
- Oracle Receivables
- Oracle General Ledger
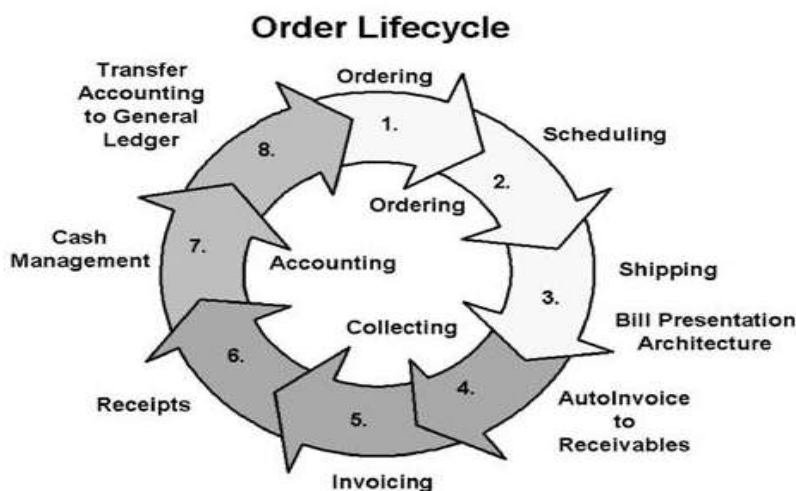
The Order to Cash (O2C) process flow starts with Entering a Sales Order with a Standard Item into the system. When we enter a Sales Order, the item is validated in Oracle Inventory, the price is calculated for the items using pricing engine and availability of the items are checked. Once all the required fields are entered in Sales Order we can book the order. The next step is the Pick Release with which we move the items from warehouse to the staging area where all the goods are ready to get loaded into a transport vehicle. The next step is to confirm the Shipment to indicate that the items are loaded on to the carrier from staging area. When we run the Ship Confirm the system decrement inventory and updates sales order line status.

This information is then sent through the Auto invoice to Oracle Receivables for invoicing. Then the invoice is sent to the customer for the items shipped. Once the customer sends us the payment we reconcile the payment in Cash Management module. Once the reconciliation is complete all the accounting transactions gets transferred to General Ledger.

Oracle Inventory:

ER Diagram

Inventory Flow Process
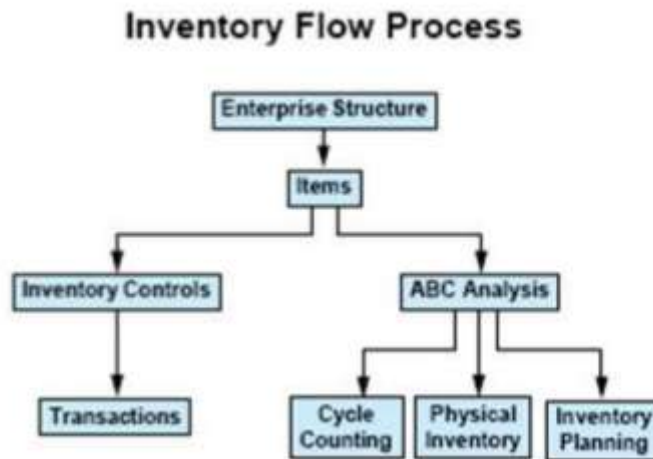
Oracle Inventory is core module of Oracle e-Business Suite. This Module shares and is integrated with almost any other module in Oracle e-Business Suite. Oracle Inventory lets us to define the items and it is the backbone of all inventory transactions happening in any manufacturing organization. With Oracle inventory we can improve inventory visibility, reduce inventory levels and control inventory operations. All the material in each line of business and stage of inventory lifecycle can be tracked in a single system

Organizations:

An Inventory Organization is a logical entity which only holds items with no transaction of items. An inventory organization is a physical entity like a manufacturing facility, warehouse, distribution center or a branch office where inventory is stored and transacted. It has its own location with a primary ledger, a costing method, a workday calendar and a list of items. In short this organization is used for inventory management.

An Inventory Organization is a facility where we store and transact items. Before starting to use Oracle Inventory we must define one or more inventory organizations. Inventory Organizations can be one of the following:

- A physical entity such as a Manufacturing Facility, Warehouse or a Distribution Centre.
- A logical entity such as an Item Master Organization which we use to define items.
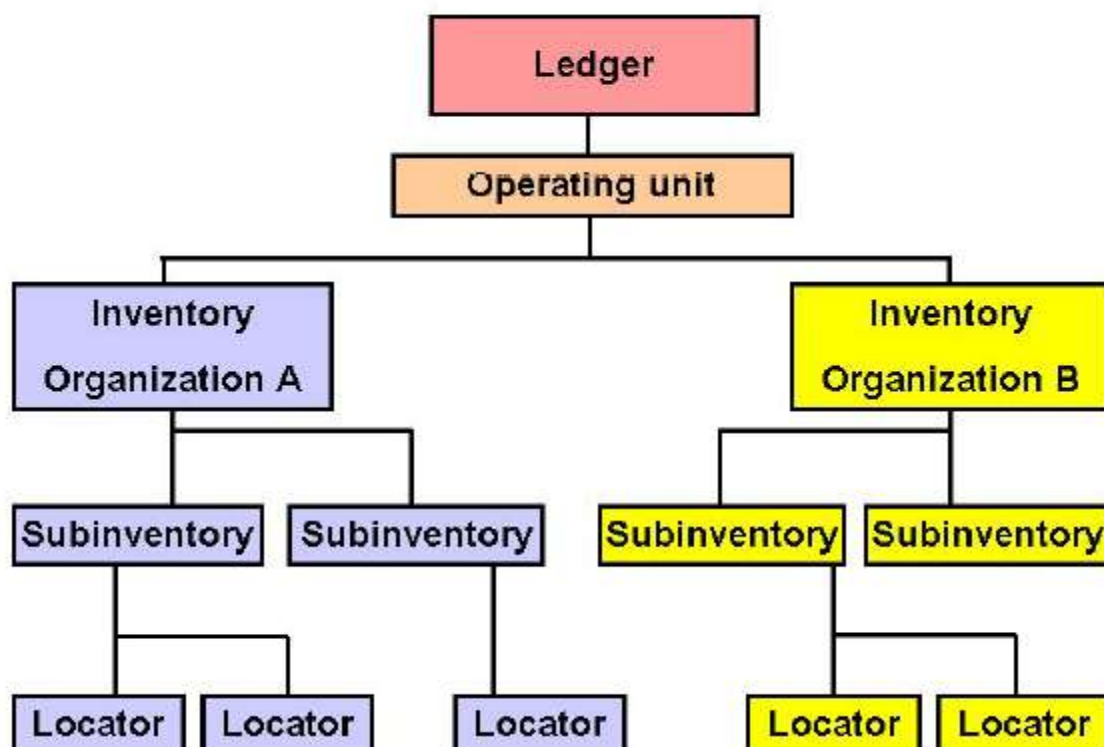
Define the organization in Organization Form in HRMS Module.

Classify the organization as Inventory Organization.

Subinventories and Locators

A Subinventory is used as a holding point for on – hand inventory and generally represents a stockroom, stocking area or cage used for storage of items. A Subinventory is defined within the Inventory Organization. An inventory organization may have any number of subinventories.

Subinventories are unique physical or logical separations of material inventory such as Raw Inventory, Finished Goods. All materials within an organization is held in a Subinventory therefore we must define at least one Subinventory.
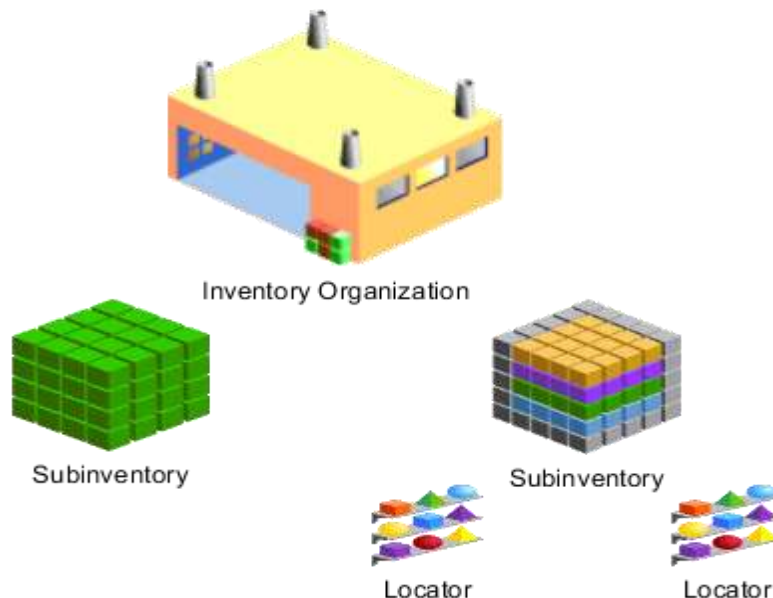
Locators:

Locators or otherwise called as Stock Locators are used to represent physical locations within a subinventory. We may choose to use stock locators for selected subinventories or selected items within the selected subinventory. With the usage of stock locators subinventory and locator track on – hand balances. Therefore if locators are defined to represent a shelf within a stockroom, on – hand balances on the system would show the item and quantity down to the physical location within the facility.

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Locators must be unique within an organization, we cannot use the same locator in different subinventories within an organization but we can use the same locator in subinventories in a different organization.

Item Controls

During Item creation we may decide to restrict the use of items by controlling items within an inventory organization. When an item is defined it is defined in the Item Master Organization and this can be assigned to other inventory organizations. These items defined are held in subinventories which contain Locators, Serial Number of each item, Lot Number, Revision Number within that subinventory can be used to control items.
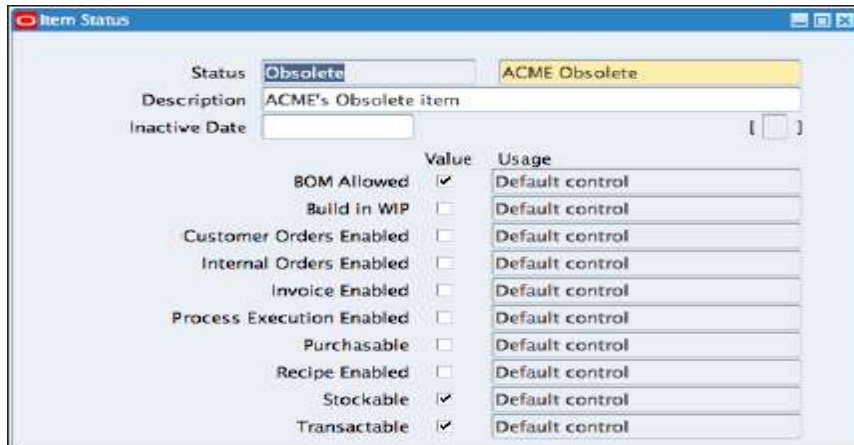
Following are the Item Controls:
- Item Status
- Item Attribute

The Item Status is the status of an item and it determines the actions that can be performed on an item. For example an obsolete item may not be sold to the customer but can be used as parts for repairs and still can be considered as stackable.

Example to create an Item Status for an obsolete item:
- Navigate to Oracle Inventory Responsibility
- Navigate to Setup/Items/Status Code
- In the status field enter Obsolete and ACME Obsolete in the translated status field
- Enter the description ACME Obsolete Items.
- Enable the following attributes and save the Form.
  BOM Allowed
  Stackable
  Transactable

The Levels that the attributes can be controlled at are set in the Item Attributes Form.

Let's take a look at some of the Item Attribute Controls:

- Navigate to Setup Items/Attribute Controls
- From the menu, select View/Query By Example/Enter
- In the Group Name field enter Main%.
- From the menu, select View/Query By Example/Run
- Observe that some attributes are controlled at the Master Level and some at the Organization Level.
- Close the Form.

Item Categories

An Item Category is a logical classification of items that have similar characteristics. Item Categories are the method by which the items in inventory can be separated logically and functionally for planning, purchasing and other activities.

For example suppose we need a category called 'INV_COLORS' we can define multiple colors in this category and then assign this category to each item.

Item 1 – Black

Item 2 – Green

Item 3 – Red

Item 4 - Orange

Inventory Transactions Flow:

A Transaction is an item movement into, within or out of inventory. A transaction changes the item quantity on – hand, location or cost of an item. All transactions validate the various controls like revision, locator, lot, unit of measure and serial number we enable for each item.

Inventory Transactions enables us to :
- Receive items into our organization
- Issue items out of our organization
- Transfer items from one subinventory in our organization to another subinventory in the same organization
- Transfer items between organizations
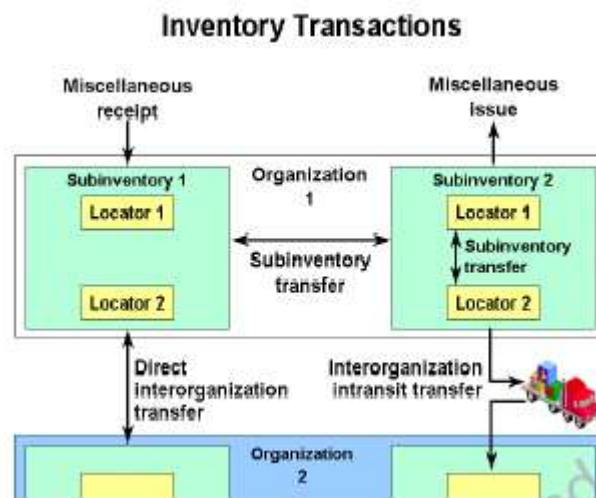
Transaction Source in Oracle Inventory determines the source from where the item should come into Oracle Inventory Module.eg Assets (Mass Addition), Legacy Systems etc.

Transaction Type in Oracle Inventory determines the type of the transaction whether it is Miscellaneous Receipt or Miscellaneous Issue.

Open Interface Tables (Setup and Transactions)

Following are the Open Interface Tables for Oracle Inventory:
1. Open Transaction Interface
2. Open Replenishment Interface
3. Item Open Interface
4. Customer Item and Customer Item Cross Reference Open Interfaces
5. Cycle Count Entries Interface.

Open Transaction Interface – We can load transactions from external applications and feeder systems using this interface. These transactions could be simple material issues, receipts, or transfers or even sales order shipment transactions from an external order entry system.
Interface Table – MTL_TRANSACTIONS_INTERFACE

Open Replenishment Interface – This enables us to load replenishment requests from external systems such like bar – code application. Such requests may be in the form of stock – take counts or requisition requests for subinventories in which we do not track quantities.

Item Open Interface – We can import items from any external source into Oracle Inventory using Item Interfaces. We can convert inventory items from another inventory system migrate assembly and component items from a legacy manufacturing system, convert purchased items from a custom purchasing system. The Item Interface validates the data ensuring that the imported items contain the same item detail as the items we enter manually in the Master Item Window.

Oracle Purchasing:

ER Diagram
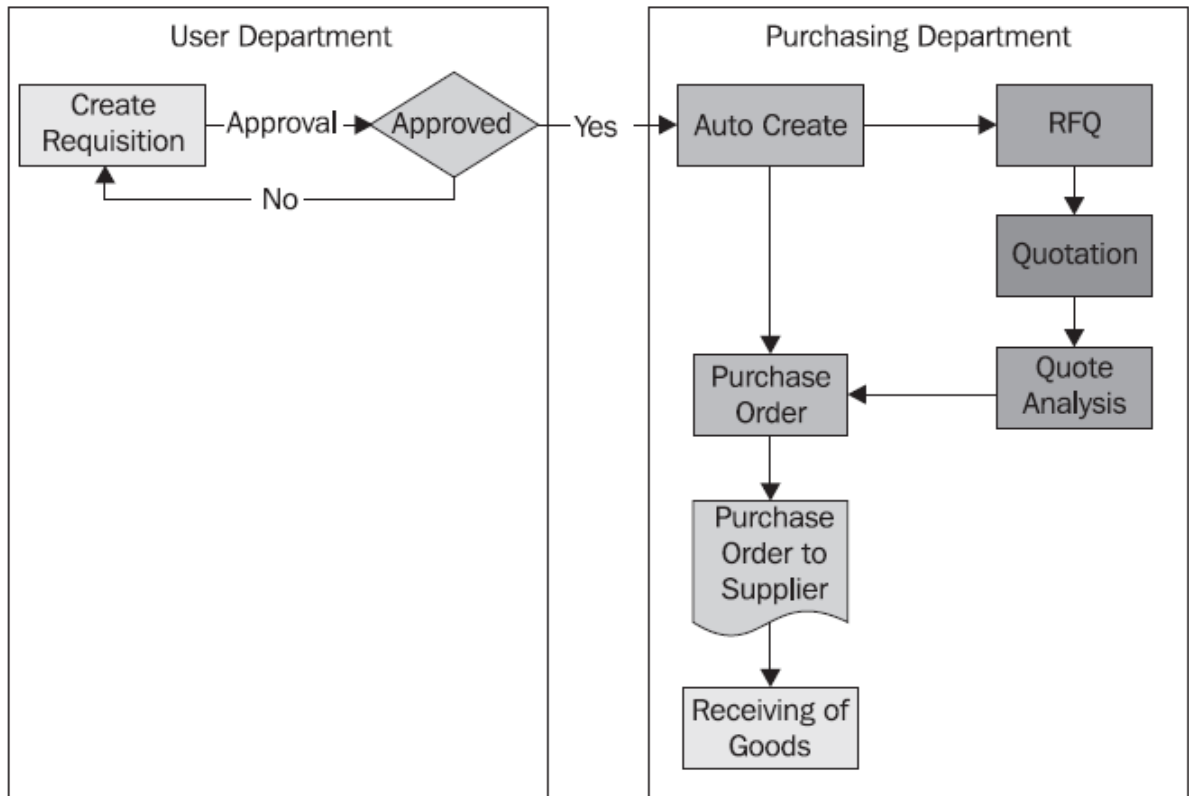
Oracle Purchasing gives the organization the concept of centralized procurement using Oracle e-Business Suite. Using Oracle Purchasing we can create various purchasing documents and keep track of previous purchases. On the basis of these previous purchases we can even forecast our future requirement's costs and carry out supplier management, product trend analysis and so on.

The key functionalities of Oracle Purchasing are:
- We can create internal and purchase requisitions
- We can create request for quotation documents for different suppliers
- Oracle Purchasing allows us to enter and maintain supplier quotations
- We can enter and maintain supplier master records which enable us to calculate the efficiency.
- Using Oracle Purchasing we can create different types of purchase orders

The procurement process using Oracle Purchasing starts when we create a purchase requisition in Oracle e-Business Suite. Once the purchase requisition is completed and verified by the requester it is forwarded to its approval hierarchy for manager's approval.

Suppliers:

In Oracle e-Business Suite suppliers can be employees to whom we reimburse their expenses or organizations from which we purchase goods or services. Suppliers are essential for creating purchasing documents. We define Suppliers in Oracle e-Business Suite to record information about individuals and companies from whom we purchase goods and services. Any Payee is called as a Supplier.
We define a new Supplier using the Responsibility: Purchasing.
Navigation > Supply Base (B) > Create Supplier

The major tables used for Suppliers are as follows:
- AP_SUPPLIERS – Information about each supplier.
- AP_SUPPLIER_SITES_ALL – Information about each Supplier Site operating unit wise.
- AP_SUPPLIER_CONTACTS – Information about supplier site contacts.

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Requisitions:

A Purchase Requisition is the point of initiation of the procurement process on the basis of requirement and demand. A Purchase Requisition is raised when we require some goods and services. This requirement can originate from different departments. The buyers will only process approved purchased requisitions. Requisitions represent demand for goods and services.

The major tables used for Purchase Requisitions are as follows:
- PO_REQUISITION_HEADERS_ALL – Information about requisition headers.
- PO_REQUISITION_LINES_ALL – Information about each requisition lines.
- PO_REQ_DISTRIBUTIONS_ALL – Information about accounting distributions associated with each requisition line.

Purchasing Documents:

The Documents that are generated by Oracle Purchasing are called the Purchasing Documents also known as Procurement Documents.
In order to understand this we need to know what
a Purchase Order document is.
A Purchase Order contains the list of items and price which is agreed with the supplier in the Request for Quotation process. The Purchase Order is a legal document between the supplier and the buying organization. The Purchase Order contains the payment terms, the need-by date and the promised date of the goods. It also contains the shipping schedule, ship – to – location, bill – to – location and accounting information.

Oracle Purchasing allows us to create different types of purchase orders as follows:

- Standard Purchase Order
- Planned Purchase Order
- Blanket Purchase Order
- Contract Purchase Order.
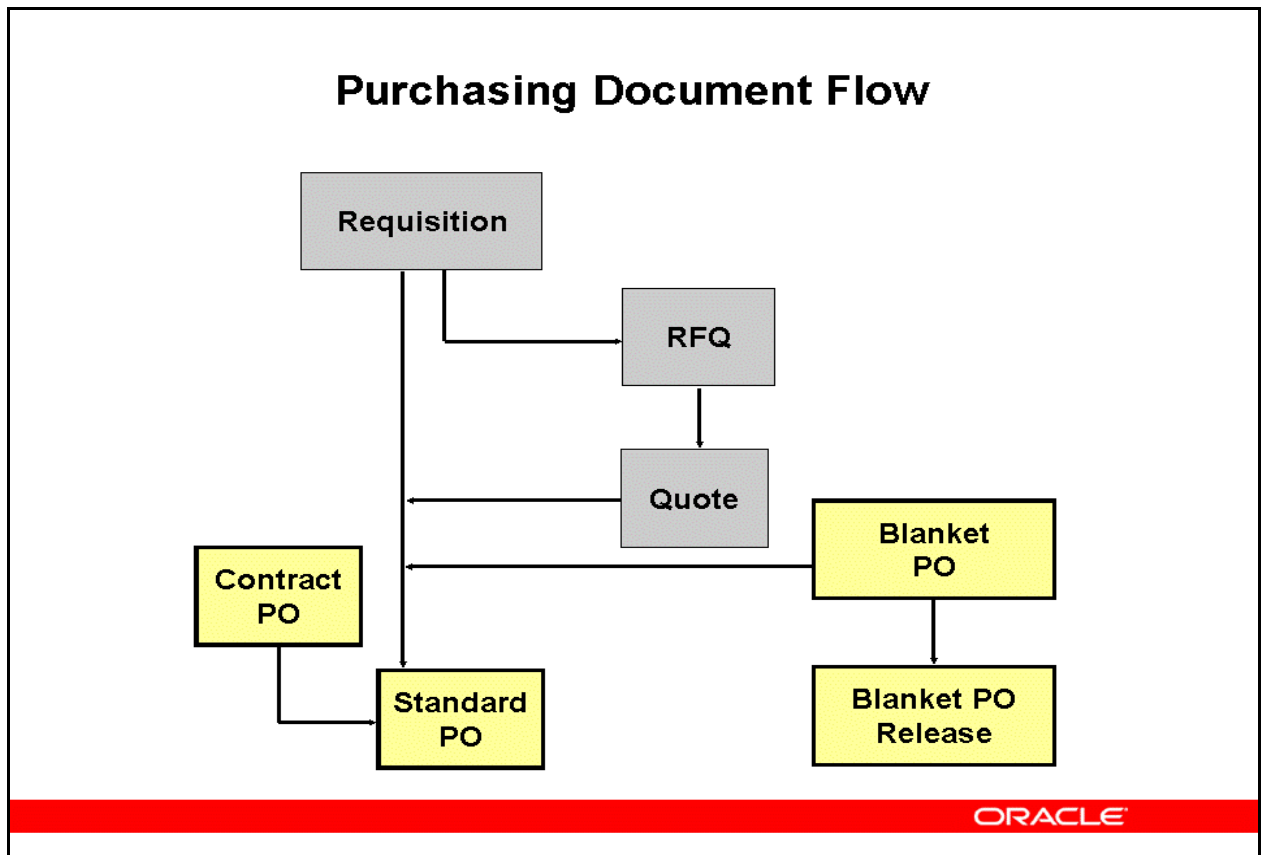
A Standard Purchase Order is a one – time commitment to purchase goods or services. We create Standard Purchase Order when we know the details of goods or services, estimated costs, quantities, delivery schedules.

A Planned Purchase Order is a long – term purchase agreement committing us to buy goods or services. Planned Purchase Order includes tentative delivery schedules.

A Blanket Purchase Order is a long – term agreement allowing for stable pricing over the life of the agreement, and also allowing flexible order quantity commitments and delivery schedules. We use this purchasing document when negotiating volume discounts on individual items.

A Contract Purchase Order is a terms and conditions purchase document. We use this purchase document when negotiating pricing on a volume of business too manage terms and conditions.

Receiving

Receiving is a process which signals that goods ordered on a purchase order has arrived. Receiving is the process in which we physically receive the purchased goods. Receiving can be a closing point for a purchase order in terms of quantity. After receiving goods at the receiving location the process of inspection takes place where we accept or reject the required quantity.
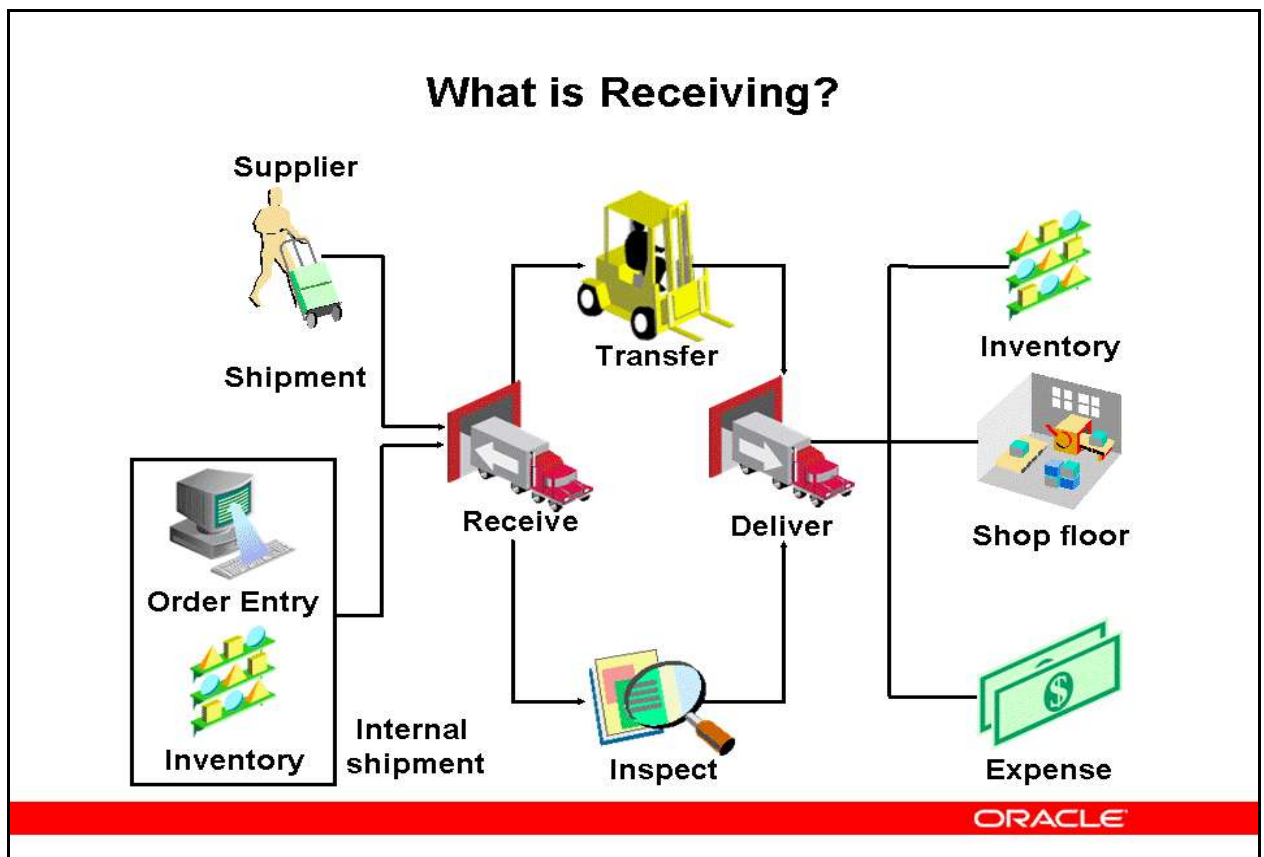
Receiving Tables:

- RCV_SHIPMENT_HEADERS
- RCV_SHIPMENT_LINES
- RCV_TRANSACTIONS

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Open Interface Tables:

Following are the open interfaces available in Oracle Purchasing:
1. Requisitions Open Interface
   We can import requisitions from legacy systems into Oracle Purchasing
2. Purchasing Documents Open Interface
   We can import and update price/sales catalog information and request for quotation (RFQ) from suppliers through Purchasing Documents Open Interface. We can also import Standard Purchase Orders from a legacy system through this interface program. We can even choose whether to import the legacy data into Oracle Purchasing either as Standard Purchase Orders, Blanket Purchase Agreements, or catalog quotations.
3. Receiving Open Interface
   The Receiving Open Interface is used for processing and validating receipt data that comes from sources other than the receipts window in Oracle Purchasing.

Interface Name	Data Flow Direction	Table, View, or Process	Table, View, or Module name
Requisitions	Inbound	Table	PO_REQUISITIONS_INTERFACE_ALL PO_REQ_DIST_INTERFACE_ALL
Purchasing Documents	Inbound	Table	PO_HEADERS_INTERFACE PO_LINES_INTERFACE
Receiving	Inbound	Table	RCV_HEADERS_INTERFACE RCV_TRANSACTIONS_INTERFACE

Bill of Material:

Flow

A Bill of Material is a list of items associated with a parent item such as an assembly and information about how each item relates to the parent item.
A Single – Level BOM consists of one parent item and its immediate component items.
Multi – Level BOM's are displayed by linking together all the single level BOM's stored in the system.
A Sub – Assembly is both a parent and a component
All items in a BOM model including the parent item must be defined in the Oracle Inventory.
A BOM Model can be shared among other Inventory organizations by creating common bills.

Engineering Department Flow

After a valid combination of options is selected from BOM model a standard BOM is created to guide manufacturing planning and execution.
Oracle Bills of Material contains information on the parent item, components, attachments and additional information pertaining to each item. We can create either engineering or manufacturing bill copy an existing bill or reference a common bill.
Prerequisites for creating a Bill of Material: Define the parent item and all components as inventory items in Oracle Inventory and set the BOM Allowed item attribute to Yes and BOM Item Type to Model, Option Class, Planning or Standard while defining the item.
Let us take the example of a bicycle. It is made of two wheels. Here is the Bicycle is the parent and the wheel is its component. The wheel consists of a rim. The wheel here is the parent item and the rim is the component (child). Thus the first level of BOM is Bicycle, the second level is Wheel and the third level is Rim. We can continue further to the level of Spokes. The maximum BOM level that Oracle supports is 60.

An organization uses BOM:
1. To manufactures assemblies and sub – assemblies
2. To configure Sales Orders
3. To calculate Standard Cost
4. To forecast (planning)

Engineering Routing Flow:

A Routing is a description of which process steps have to 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 as well as about the required production resources and tools. A routing is used as a source for creating a production order or a run schedule header by copying.
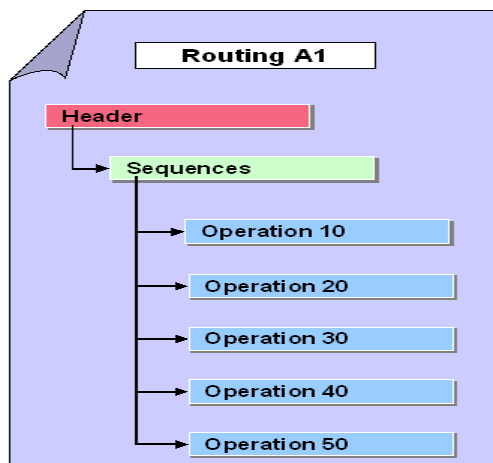
Work in Progress:

Process Overview

Oracle Work in Process is a complete production management system. Work in Process is an integrated suite of business solutions. Work in Process supports discrete, project, repetitive, assemble – to – order or a Combination of manufacturing methods.

Oracle Work in Process is the core of Oracle's Discrete Manufacturing Solution. Oracle Work in Process provides a complete production management system that improves productivity, quality, and responsiveness while maximizing production.

Overall Flow
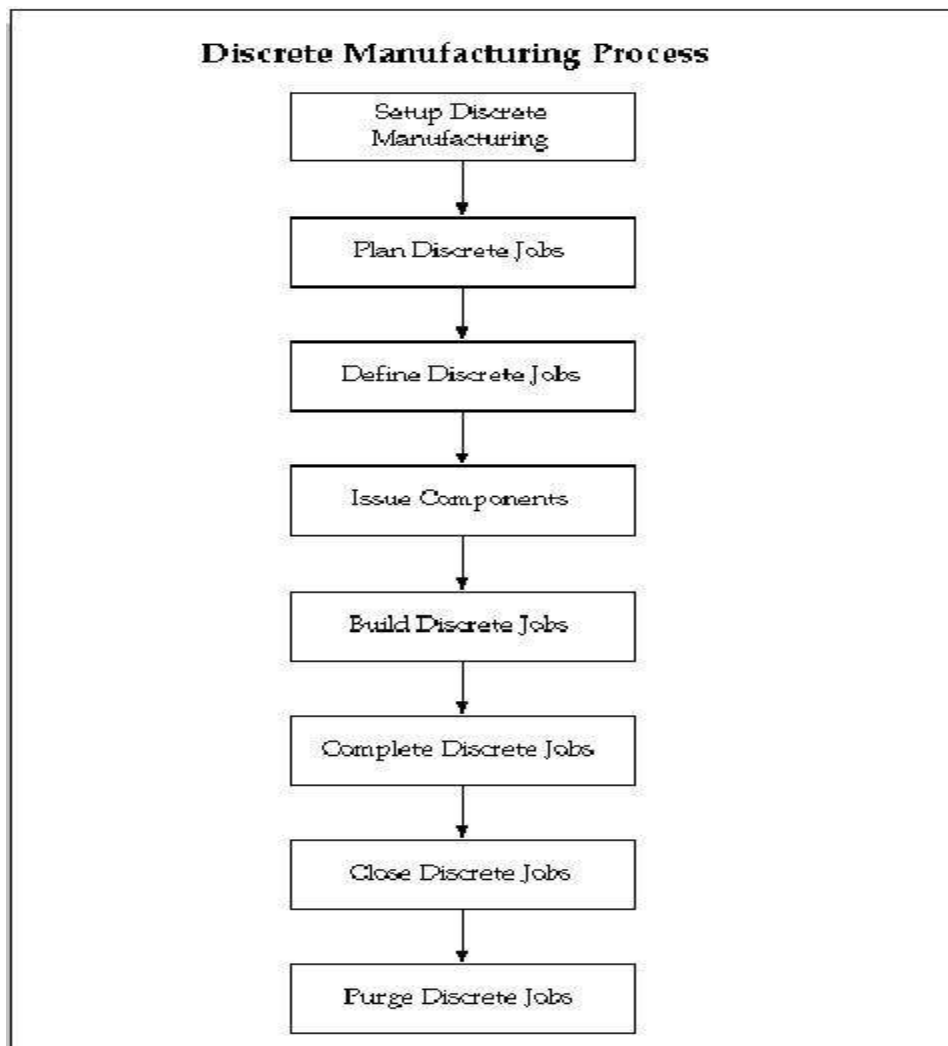
Discrete Jobs Flow

An organization can use Oracle Work in Process to produce assemblies in discrete batches also known as Discrete Jobs.
Discrete Job or Work in Process Job is a work order issued to shop floor to manufacture or assemble an item.

Work in Process Jobs can be created in 6 different ways:
- Manually enter/create
- Convert from a simulation
- Planned Order Release from Supply Chain Planning
- Planned Order Release from Advanced Supply Chain Planning
- Auto create from a configure to order sales orders
- Using work order open interfaces.

Repetitive Schedule Flow

We can use Work in Process to produce assemblies on a continuous basis, this is known as repetitive manufacturing. We can control the repetitive production quantities using repetitive schedules. We charge all production costs to the assembly itself instead of the usage of discrete jobs.
We define repetitive schedules to build assemblies repetitively on a production line. Repetitive Schedules are used to schedule production, resources and material requirements and to collect the costs of manufacturing a repetitive assembly on a production line.

Material Transaction Flow

We can issue components from inventory to jobs and repetitive schedules and return issued components from jobs and schedules to inventory using the Material Transaction concept in Work in Process.

Move Transaction Flow

We can move the assemblies that are built from one operation and intra operation step to another using the concept of Move Transaction in Work in Process. We can move assemblies forward and backward within and between operations.

Resource Transaction Flow

Resource charges can be transacted manually, with move or purchase order transactions, or imported from outside data sources or data collection devices. Resources are charged based upon their charge type either as Manual, Work in Process Move, PO Receipt and PO Move.
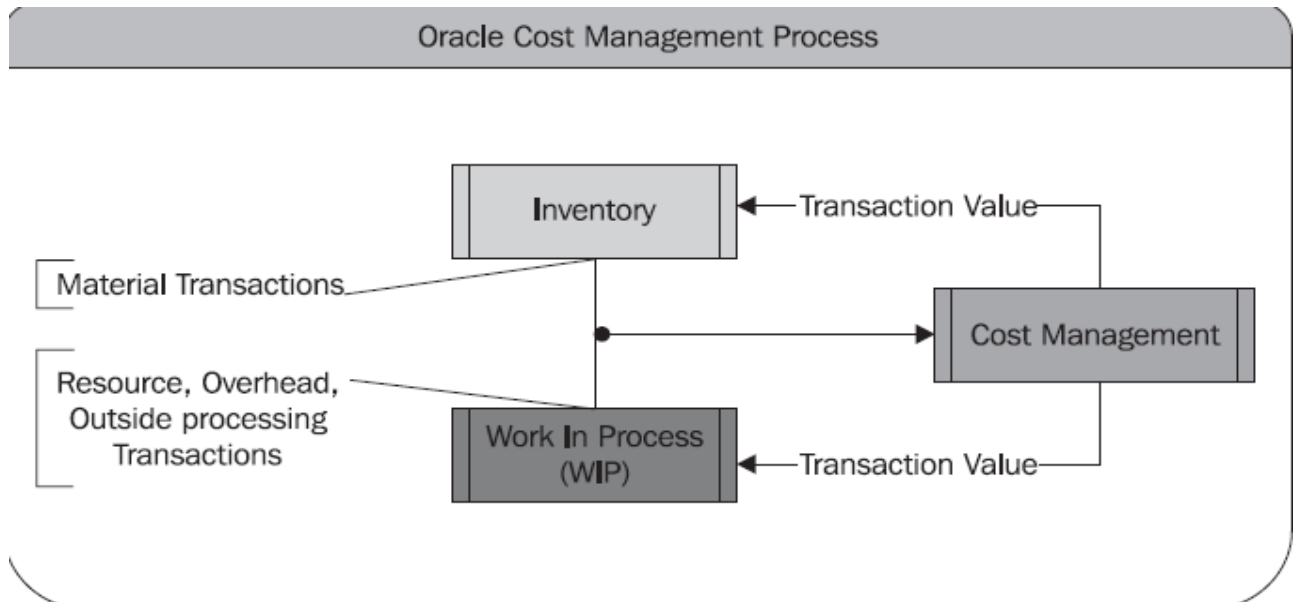
Oracle Costing:

Overall Flow

Oracle Costing is a very important part of Oracle e-Business Suite. Its main functionality is to manage changing and periodic costing for Oracle Inventory, Work in Process, Purchasing. It supports costing methods such as average, standard, and LIFO/FIFO. Using Oracle Costing we can create multiple cost elements and sub – elements to capture our business needs and scenarios. Examples include materials, material overheads, and resources and so on.

Oracle Costing like other modules of Oracle Applications works using periods. We need to have an open period in order to enter or create any transactions.

Following are the key functionalities of Oracle Costing:

- Creating the valuation of Inventory, Work in Process and Purchasing with Oracle Costing.
- Creating various cost methods for inventory organization to capture day – to - business.
- Formulating our budgets and plans using Oracle Costing.
- Creating and maintaining item cost in Oracle Costing
- Creating and maintaining periods for inventory organization and transferring the transitional entries to General Ledger.
- Maintaining a historical cost for inventory and keeping track of cost changes over time.
- Calculating and analyzing profitability using Oracle Costing.
- Running reports such as inventory valuation, gross margin and gross revenue reports.

Oracle Costing initiates when an Oracle Inventory value material transaction is created due to different receiving, issuance and transfers that take place against transaction types. Oracle Costing works when transactions related to Work in Process are valued such as resources, material overheads and outside processing.

Cost Types – Average, FIFO, LIFO:

Oracle Costing supports three common cost types:

Average – In average cost, the cost of the item is the average of all the receipts which are included in the inventory. The average cost method has two different types: moving average costing and periodic average costing.

In moving average costing method Oracle Costing values the transactions on the basis of the value of these transactions. The moving average cost shows the cumulative value of the transaction created and the quantity they have.

In periodic average costing method Oracle Costing values the transactions periodically on the basis of value and not on a transactional basis. The main functionality of using periodic average costing is to make costing consistent up to period level and periodical cost of the product changes.

The FIFO/LIFO costing methods are layer costing methods based on actual transactional cost.

The LIFO method is made on the concept that goods that are entered last in the inventory will be issued first and this applies to cost of the transaction too. In FIFO system works in a way that the goods that are entered first will be the first to come out of inventory and this applies to cost of the transaction too.

FIFO/LIFO Example

	Inventory Units		Total Cost
January 1	100	@$5 per unit, beginning inventory balance	$500
January 10	200	Purchase @ $6 per unit.	$1,200
January 20	300	Purchase @ $7 per unit.	$2,100
	600	Units Available for Sale in January	$3,800
	-300	Units Sold in January (COGS)	$?
January 31	300	Ending inventory balance	$?

	$5 Units	$6 Units	$7 Units	Total
FIFO:				
COGS	100	200	0	$1,700
Inventory	0	0	300	$2,100
Total				$3,800
LIFO:				
COGS	0	0	300	$2,100
Inventory	100	200	0	$1,700
				$3,800

Cost Management – Resource and Overhead Costs:

Resource Cost is one of the most important cot elements for average costing methods in Oracle Costing. Resource Cost is an element that is used to capture cost incurred in labor, machinery or other direct cost.

Resource Overhead cost is the element that carries the overhead cost of the resource.

To define Resource Cost we navigate to Oracle Cost Management and further navigate to Setup/Sub elements.

As discussed a Resource is anything that we need to perform, such as employees, machines, physical space. These resources are associated with organization's departments and these departments can have a list of resources that the organization can utilize.

Overhead Costs are those costs which an organization incurs due to unavoidable circumstances happening in the organization's business which otherwise may not fall in the categories defined in the budget.

Oracle General Ledger:

Oracle General Ledger is the Central Repository Module for accounting information and transactions from manufacturing and financial subledgers. Oracle General Ledger is the collector of all data –financial and accounting that is eventually used to produce financial reports for the enterprise. Transactions and accounting information are transferred from subledger modules (AP, AR, PO, Inventory and so on) to General Ledger at month – end or at periodic intervals.
Oracle General Ledger only receives information it does not send information.

General Flow
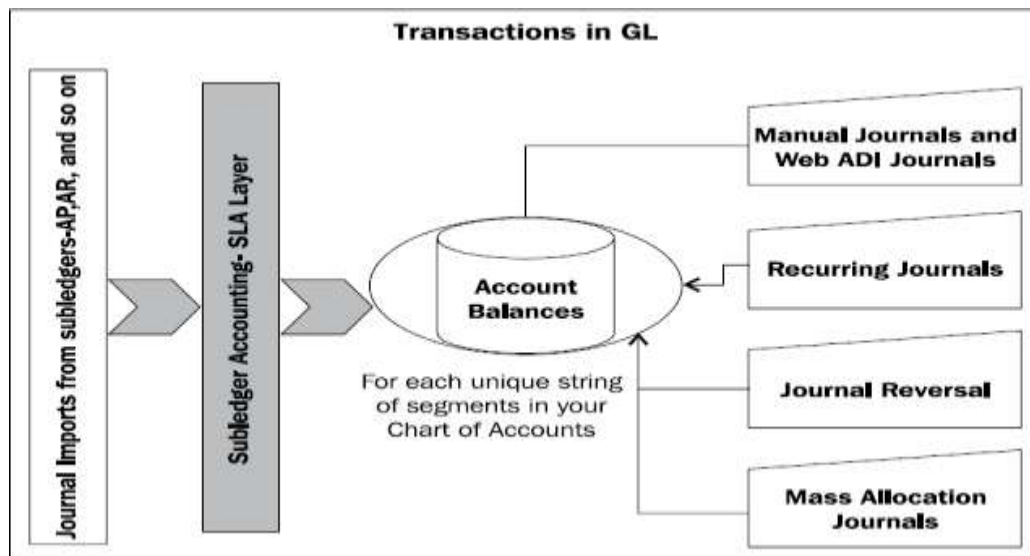
Accounting Information is transferred as Journal Imports from subledger modules like Oracle Payables, Oracle Receivables, Oracle Inventory, Oracle Purchasing, Oracle Cash Management, and Oracle Costing. These information are stored in a module called Subledger Accounting Module in Account Balances format.

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Account Balances also generate internally in Oracle General Ledger through Manual Journals, Recurring Journals, and Mass Allocation Journals and sometimes through Journal Reversals.

Set of Books and Associated Tables

Prior to R12 Oracle e-Business Suite 11i introduced a concept known as Set of Books.

Set of Books is one where all the organization's day – to – day transactions are performed and these transactions need to be recorded for better consolidation and reporting analysis for the management.

R12 introduced the concept of Ledger replacing Set of Books.

A Ledger is an Accounting Book. Ledger consists of a Chart of Accounts, Accounting Calendar, Currency and Subledger Accounting Method.
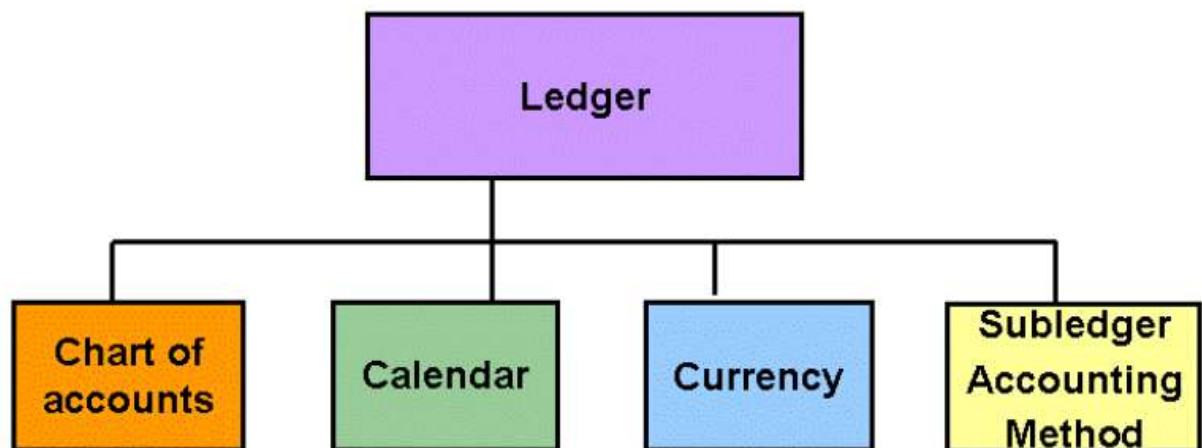
We can define more than one ledger if required. For example the organization may have the manufacturing plant in Europe that requires a different currency and fiscal calendar than the manufacturing plant in India. Therefore we would setup two different ledgers for these manufacturing plants.

Journal Entry Flow

```
┌─────────────────────────────────┐
│         Feeder Systems          │
│                                 │
│   • Accounts Receivable         │
│                                 │
│   • Accounts Payable            │
│                                 │
│   • Fixed Assets                │
└─────────────────────────────────┘
```

```
┌──────────────────────────────────────┐
│           General Ledger             │
│                                      │
│   Journal Import                     │
│                                      │
│   Manual Journal Entries             │
│   Reversing Journal Entries          │
│   Recurring Journal Entries          │
│   Mass Allocation Journal Entries    │
│   Consolidation Journal Entries      │
└──────────────────────────────────────┘
```

```
   Oracle
  Database
```
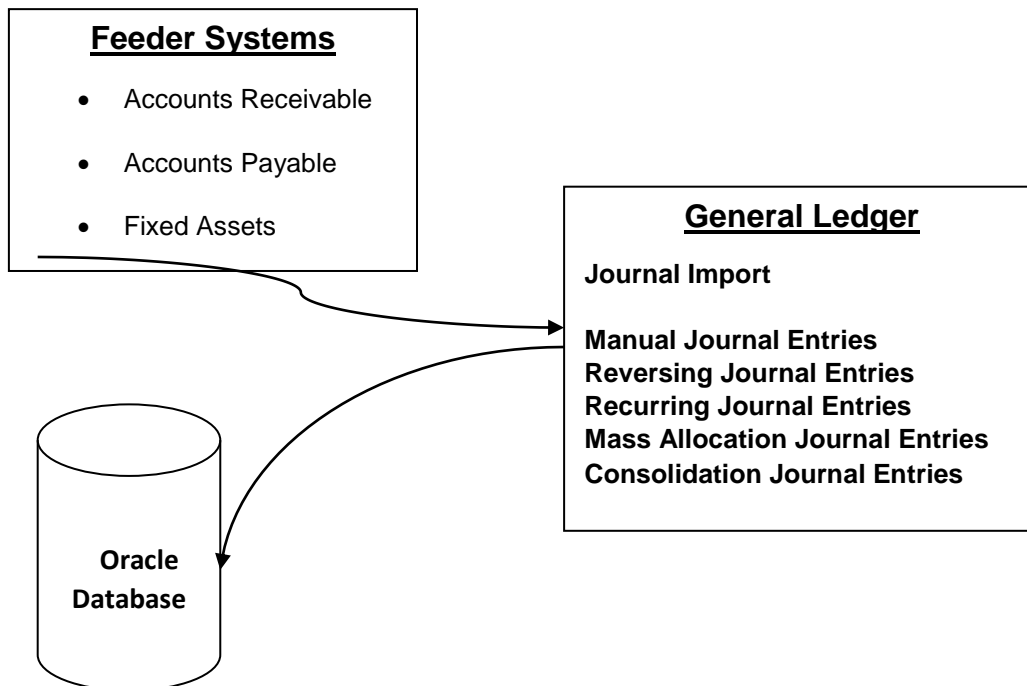
All the mentioned data entry methods produce journal entries, which can be reviewed, corrected and posted.

Accounting Transactions flows into General Ledger through the following Feeder Systems like Oracle Payables, Oracle Receivables, Fixed Assets etc…These transactions are transferred to General Ledger as Journal Entries and stored in oracle database.

The following table explains the entry method through which Journal Entries are created in General Ledger:

Data Entry Method	Journal Entry Created
Manual Journal	Yes
Journal Import	Yes
Reversing Journal	Yes
Recurring Journal	Yes
Mass Allocation	Yes

Manual Journal Entries are basic journal entries which are used for most accounting transactions.

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Journal Import helps in importing journal entry information from feeder systems internal & external.

Reversing Journal Entries are created by reversing an existing journal entry. Recurring Journal Entries are defined once then are repeated for each subsequent accounting period we generate. We can use recurring journal entries to define automatic consolidation.

Mass Allocation Entries utilize a single journal entry formula to allocate Balances across a group of cost centers, departments, divisions. Examples include Rent Expense allocated by headcount or administrative costs allocated by machine labor hours.

Budget Flow

Use Budgets to enter the estimated account balances for a specified range of periods in Oracle e-Business Suite. We can use these estimated amounts to compare actual balances with projected results, or to control actual and anticipated expenditures.
General Ledger gives us a variety of tools to create, maintain and track the budgets including the ability to upload budget amounts from various spreadsheet software.
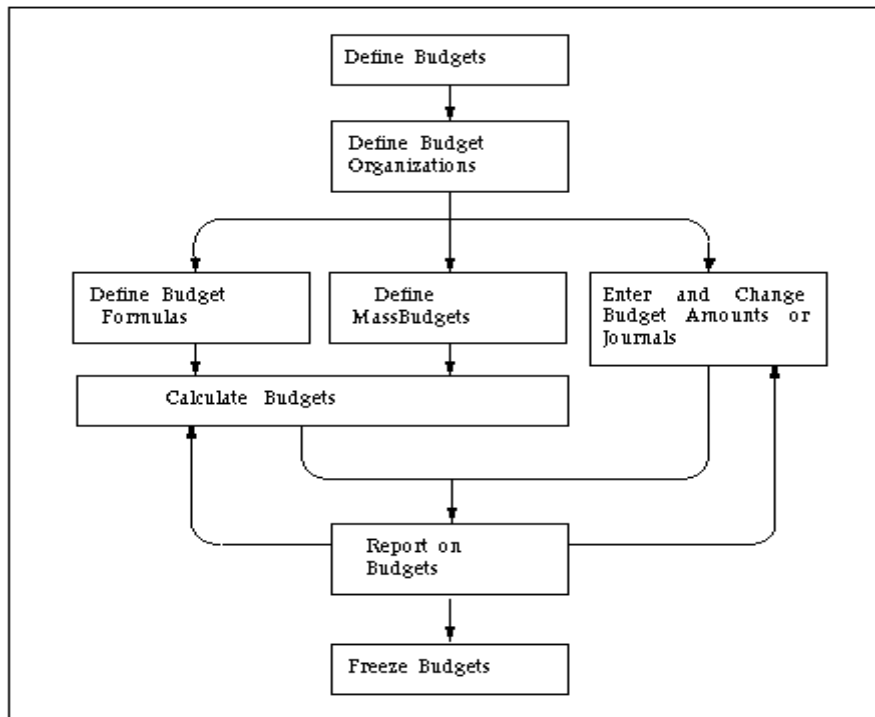
The following steps would help us to understand the process involved in using Budgets in any organization:

- Define a Budget to present specific estimated cost and revenue amounts for a range of accounting periods.
- Define a Budget Organization to represent the organization's departments, cost centers, divisions for which you enter and maintain the budget data.
- Enter the budget amounts
- Calculate budget amounts to update budget balances.
- Perform online inquiries to have a periodic review of the budget information.
- Use the Financial Statement Generator facility in General Ledger to design a variety of consolidation reports which includes budget information too.
- Freeze the budget definitions to prevent accidental or unauthorized changes.

Oracle Payables:

Oracle Payables is a tool that integrates all payment transactions. It manages invoicing and payments.

Oracle Payables is a sub – ledger where the system records what it owes its suppliers for goods and services that have been provided.

Oracle Payables helps in effective management of creditors. This effective management calls for:

- Correct booking of expenses (whether capital or revenue) under the right accounting periods. If this is not adhered to then it will result in preparation of distorted financial statements.
- Schedule the invoice for payment in such a way that the maximum available credit period is taken and the payment is properly timed.
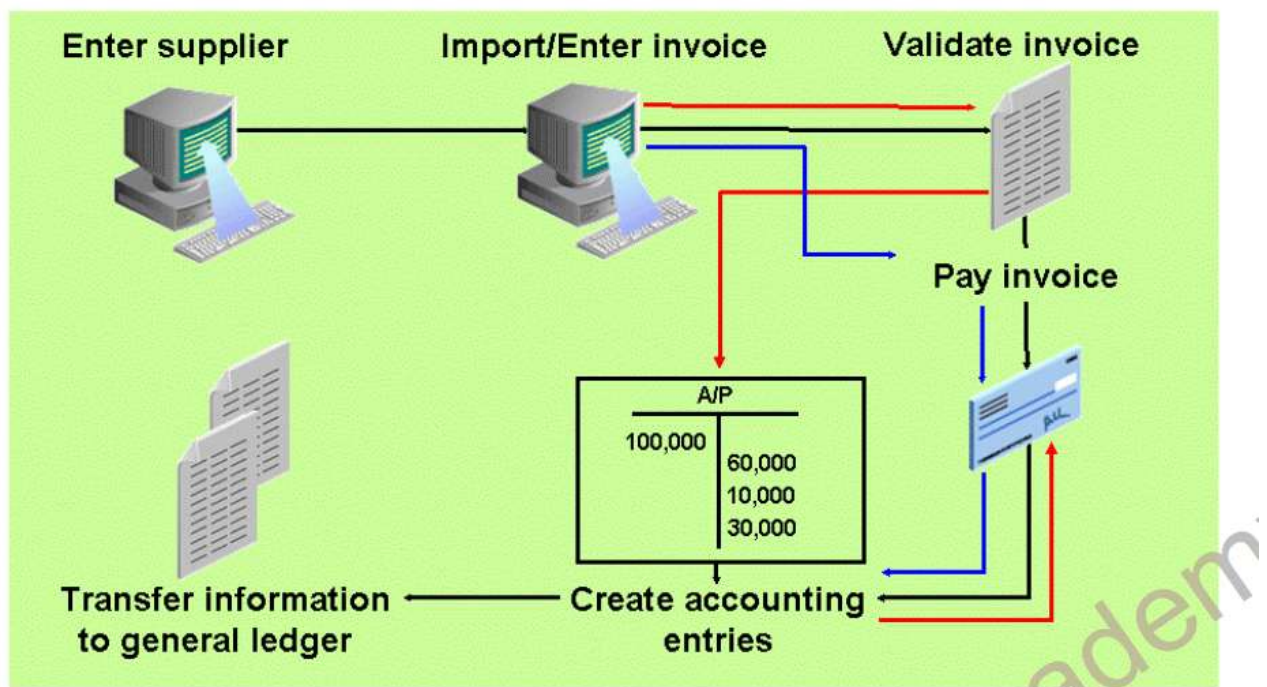
Setup

We can use Oracle Payables for five major business functions:
- Supplier Entry
- Invoice Import/Entry
- Invoice Validation
- Invoice Payment
- Invoice and Payment Accounting

To enter and pay invoices first define the suppliers and supplier sites. Payables processes many invoice types including Standard Invoices, Credit Memos, Debit Memos and Expense Reports. After invoices are entered and validated they can be paid. After these invoices are validated and paid subledger accounting entries are generated in Subledger Accounting Module and those entries are transferred to General Ledger.

Supplier Entry:

Through Oracle Payables we can:
- Enter Suppliers, their addresses and bank information such as payment terms, payment method (cheque, NEFT, EFT etc…) and supplier's bank account details.
- Enter Supplier Sites which defaults to invoices entered for that site.
- Review Supplier information online such like Supplier Balance.
- Merge duplicate suppliers.

At the 'financial level' certain values can be predefined and control options enabled. The values you define at this level act as default values across modules namely Oracle Payables, Oracle Purchasing, and Oracle Fixed Assets. These values and options cascade down to the next lower level i.e payables level. At this level some additional values and options can be defined. The values you define at the 'Payables Level' act as default exclusively for Oracle Payables modules only. From the 'Payables Level' the values and options will default to every new Supplier being defined. At the 'Supplier Level' the values and options can be overridden. These will default to Supplier Site and these will default to Invoice Level and the invoice level values will get finally defaulted to Invoice Lines and Distribution level.

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Invoices:

We can enter invoices through the following:
- Manual Entry – Manually enter the invoices either in the Quick Invoices or Invoices Workbench.
- Import – The Payables Open Interface Import program imports invoices from Payables Open Interface Tables.
- Automatically generated – Oracle Payables automatically generates some invoice types including withholding tax invoices to pay tax authorities, interest invoices, and payment on receipt invoices.
- Recurring Invoices – We can setup Oracle Payables to generate regularly schedule invoice such as Rent.
- Matching – We can match invoices to a Purchase Order or receipt.

Following are the types of Invoices we can enter manually in Oracle Payables:
1. Standard Invoices – A normal invoice received from the supplier for the goods or services rendered. The Total Invoice Amount can be broken into four components namely Item, Tax, Freight and Miscellaneous Charges.
2. Credit Memos/Debit Memos – These accept negative amounts only. These types of invoices have the effect of lowering the amount owed to the supplier. In Oracle Payables if the memo originates at the Supplier end it is known as Credit Memo and if the memo originates at the organizations end it is known as Debit Memo.
3. Expense Report – A Type of invoice used to record reimbursement business related expenses incurred by the employees.
4. Prepayment – These types of invoices are used for making advance payments to suppliers. The advance payments can later be used to set off liability.
5. Mixed – This type of invoice can accept both positive and negative amounts. Can be used as Standard, Debit or Credit Memo invoice.

Payments:

Oracle e-Business Suite R12 introduces Oracle Payments a new product to manage payments in a more comprehensive manner. Oracle Payments serves as a funds capture and funds disbursement engine for Oracle e-Business Suite products.

Oracle Payments processes transactions, such as invoice payments from Oracle Payables.

Invoice Payment Overview
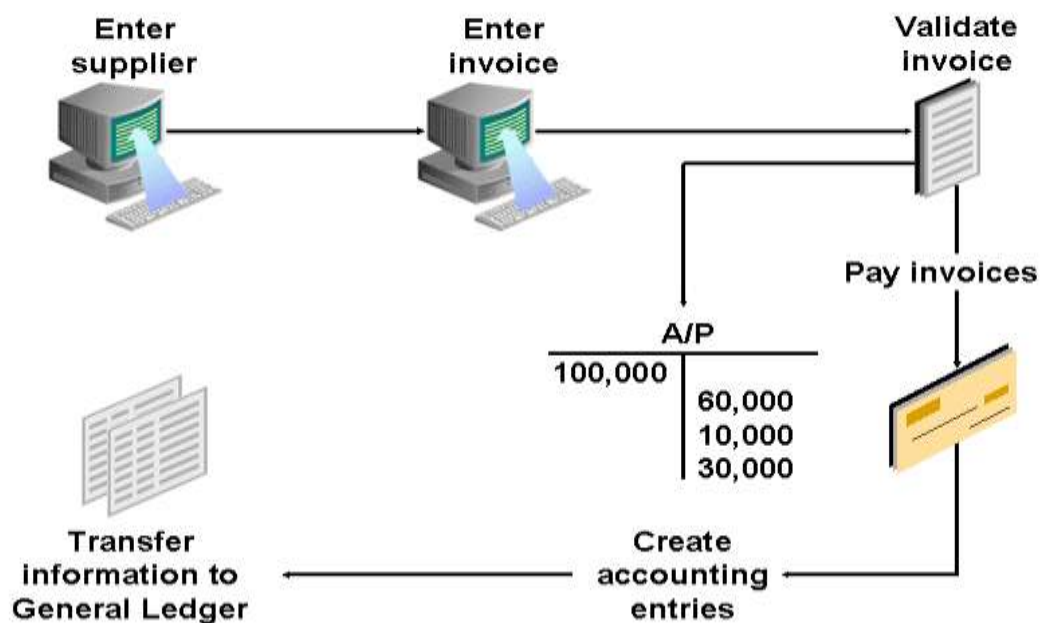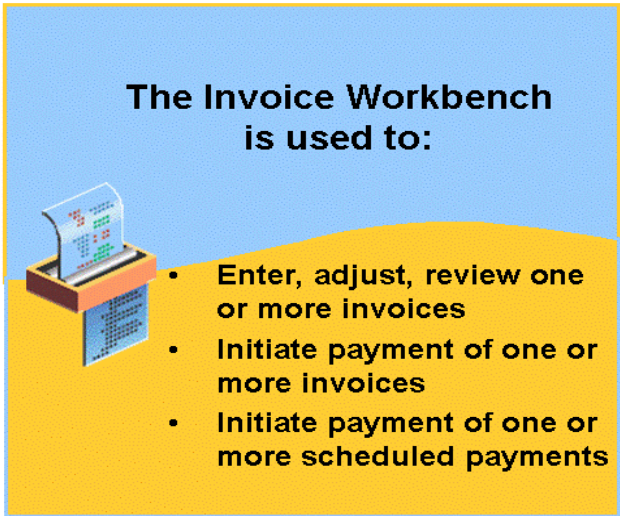
Oracle Payables provides a variety of features for fast controlled payment processing.

With Oracle Payables we can do the following:

- Make payments from the disbursement bank accounts in multiple ways, printed checks, wire or through variety of electronic funds transfer.
- Create single payments manually
- Create multiple payments automatically
- Pay only invoices that are due and automatically take the maximum discount available.
- Select invoices for payment using a variety of criteria and create payments automatically.
- Ensure that duplicate invoice payments do not occur

Let us now see how Oracle e-Business Suite provides simplicity in Oracle Payments while using the Invoice Workbench.

Using the Invoice Workbench

The Invoice Workbench is used to:

- Enter, adjust, review one or more invoices
- Initiate payment of one or more invoices
- Initiate payment of one or more scheduled payments

Fully Integrated Invoice Workbench

ORACLE

Using the Invoice Workbench Oracle Payables automatically enters most of the payment information for you. But there are some prerequisites to be followed before making a payment:

1. Each Invoice we want to pay must be validated, uncancelled and without any controls from Oracle e-Business Suite.
2. If we select more than one invoice the invoices must have the same supplier site and currency.

Using the Payment Workbench

The Payment Workbench, (Payments window) accessible through the Invoice Workbench, is used to generate:

- Manual payment
- Quick payment
- Refund

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Oracle Fixed Assets:

Setup

An organization is created with the objective of managing its resources to obtain the maximum return on investment. These resources are people, machinery, intellectual property, buildings, land and other items. These items collectively are called Assets.

People as assets are managed by an HR system that tracks their productivity and costs. The other assets cannot be managed in the same way and would need a different approach to track. This is done in Oracle e-Business Suite by fixed assets (Oracle Assets).

Following needs to be setup in Oracle Assets:
1. Flexfields
2. Asset Book
3. Calendars
4. Asset Categories

Flexfields – There are three important Flexfields that we need to create and configure as part of initials setups for Oracle Assets.
1. Asset Key Flexfield
2. Asset Category Flexfield
3. Location Flexfield

The Asset Key Flexfield is a Key Flexfield and can be defined with a maximum of 10 segments. An Asset Key Flexfield is used to track an old asset number.

The Category Key Flexfield is designed to have a maximum of seven segments. This is used to capture information related to the life of the asset and depreciation method. A Category is defined as a data element which is used for reporting especially accounting reports and for managing accounting entries. We normally use two segments a Major and a Minor Category.

The Location Key Flexfield is designed to have a maximum of seven segments. The Location Key Flexfield is used for identifying the absolute location of an asset and is assigned to every asset in asset books. Location Key Flexfield can be used to capture the State, County, City and Building. Category Key Flexfield and Location Key Flexfield are mandatory whereas Asset Key Flexfield is optional.

Asset Books – Asset Books refer to an Asset Register.
There are three types of Asset Books:
- Corporate Book Register maintained for Company Law purposes
- Tax Book Register maintained for tax purposes.
- Budget Book for Budget vs Actual reporting about assets.

We can have as many Tax Books as we need but we have to associate a Tax Book to a Corporate Book. Assets can belong to any number of Asset Books but to only one corporate book.
Corporate Books transfer accounting entries to GL, whereas Tax Books do not. In R12 we can associate the Tax Book with a Secondary Ledger and transfer accounting entries.

Calendars – Fiscal Years and Calendars are intended to be similar to the general ledger and in most cases they are similar but in Oracle Assets we must define them separately. In most cases the fiscal year (starts and end dates) and the calendar sound similar to the one we normally find in General Ledger.

Asset Categories – Before we transact any assets in Oracle Assets we have to define the categories and category details. Category definition (using the category Flexfield) enables defaulted asset information that is assigned to that category.
Once the asset category and location Flexfield have been setup we are then ready to enter and create assets in Oracle Assets.

Additions:

There are multiple methods for adding assets information into Oracle Assets.

- Quick Additions
- Detail Additions
- Mass Additions – The Mass Additions process creates asset records from information uploaded to the FA_MASS_ADDITIONS table. It uses invoice information from Oracle Payables, or external information to create assets.

How to add Asset Records using Mass Addition Process:

1. Enter an invoice in Oracle Payables where the invoice distribution account has been identified as an asset clearing account in FA_CATEGORY_BOOKS. This will cause the ASSETS_ADDITION and ASSETS_TRACKING flags in AP_INVOICE_DISTRIBUTIONS_ALL to be set to yes indicating that the record can be processed by the Mass Addition process.
2. Approve the Invoice in Payables
3. Post the invoice information from Payables to General Ledger
4. In Payables run the Mass Additions Create Process. This process creates records in FA_MASS_ADDITIONS table.
5. In Fixed Assets module perform the Prepare Mass Additions process to prepare records in FA_MASS_ADDITIONS table to be transferred to Oracle Assets
6. In Fixed Assets module run the Post Mass Addition process. This process creates records in FA_ADDITIONS_B, FA_TRANSACTION_HEADERS,FA_BOOKS, FA_ASSET_HISTORY, FA_DISTRIBUTION_HISTORY tables.
7. In Fixed Assets run the depreciation process and close the period to create records in FA_DEPRN_DETAILS.
8. In Fixed Assets module run the Create Journal Entries process. This will create journal entries for asset additions, depreciation directly in GL_JE__BATCHES,GL_JE_HEADERS,GL_JE_LINES tables bypassing the GL_INTERFACE. Fixed Assets is the only application

which does not use the GL_INTERFACE table to pass journal information into General Ledger.

Depreciations:

Decrease in value of an asset during the course of its lifetime is termed as Depreciation in Oracle Assets. Oracle Assets helps us in easier calculation of depreciation of an asset.

Oracle Assets contains multiple depreciation calculation rules for standard straight line method depreciation. When running depreciation (Program Name – Run Depreciation Program) we have an option to close the period for a specific Asset Book. Once a period is closed for an Asset Book it cannot be re-opened again.

Consequently once the Run Depreciation Programs completes three additional programs are processed by the system automatically:

1. Calculate Gains and Losses Program
2. Depreciation Run
3. Journal Entry Reserve Ledger

The following are the major tables storing depreciation details:

- FA_DEPRN_DETAIL
- FA_DEPRN_PERIODS
- FA_DEPRN_SUMMARY

There are four basic depreciation methods namely for calculation purposes:

- Flat Rate
- Table Based
- Calculated
- Production Based

Hands – On Exercises:

Exercise 1: Define a Supplier in Oracle Purchasing Module

Exercise Task:

Define a new Supplier named 'Reliance Supplier' and define its site location as Chennai Site with appropriate address details and enable the Purchasing Site Flag & Payment Site Flag.

Exercise 2: Enter the Purchase Order against the newly created Supplier in Oracle Purchasing Module

Exercise Task:

Define an Item Category named 'INV_COLOR', add the color as values to the Item Categories and then assign this item category to the item.

Exercise 3: Enter the Invoice against the newly created Supplier and match the Invoice to the Purchase Order.

Exercise Task:

Define an Item Category named 'INV_COLOR', add the color as values to the Item Categories and then assign this item category to the item.

Exercise 4: Make a Payment against the newly created Invoice in Oracle Payables

Exercise 5: Assigning Inventory Item Categories to Item

Exercise Task:

Define an Item Category named 'INV_COLOR', add the color as values to the Item Categories and then assign this item category to the item.

Solution:

Execution Flow Path:

- First we need to create a Value Set to hold the color values
  Navigation > Setup: Flexfields: Validation: Sets
  Validation Type Select as Independent

- Next we need to enter our values in the INVENTORY_COLOR valueset
  RED, GREEN, BLUE, BLACK and ORANGE
  Navigation > Setup: Flexfields: Validation: Values

Save and Close the Form.

- Now we need to create a Key Flexfield Structure
  Navigation Setup: Flexfields: Key: Segments
  Create the structure name in the "Code" field enter INV_COLORS

- Click on the "Segments" button
  Enter the "Number" field: 10
  Enter the Name field: Color
  Enter the "Window Prompt": Color (This value will appear on the screen)
  Enter the "Column" field: Segment1 (you can choose any column)

Save and exit the form.

- Check the Freeze Flexfield definition, the following Warning will appear
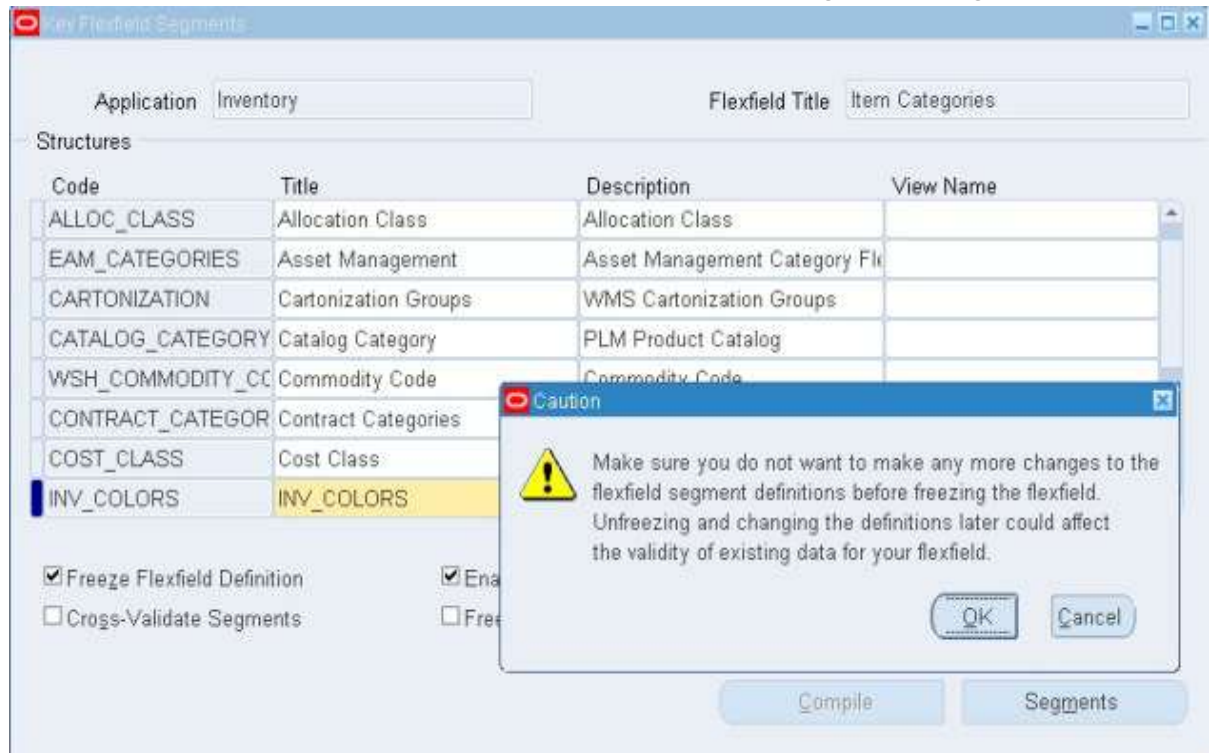
- The "Compile" button is now available to be selected. Click on the Compile button.
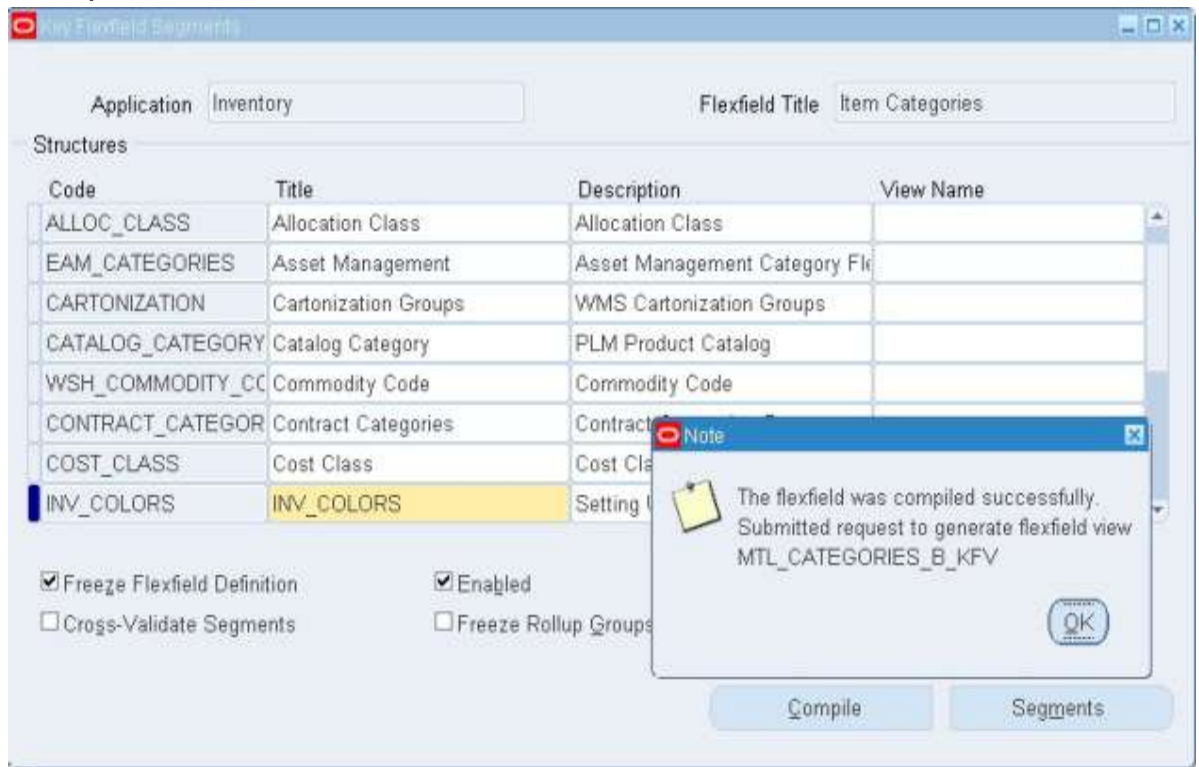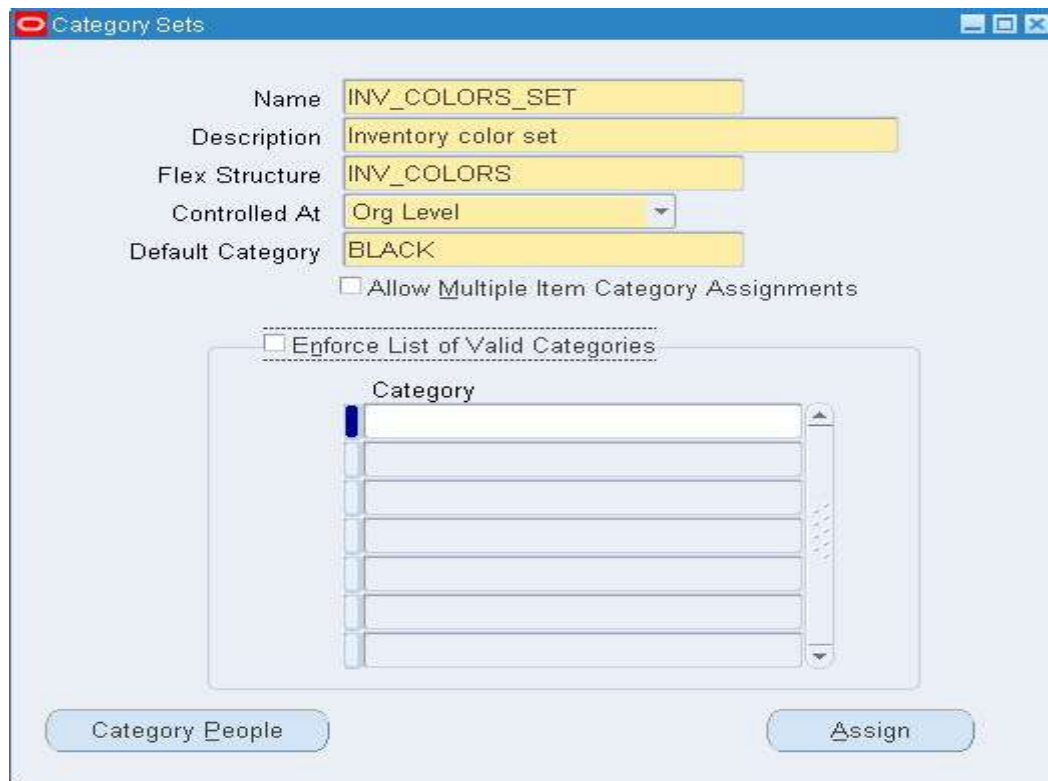
Click OK and Close the Form.

- The new structure is ready to use. Now let's create the Item Category.
  Navigation: Setup: Items: Categories: Category Codes
  Enter the structure name: INV_COLORS
  Enter the category as BLACK
- Enter the description
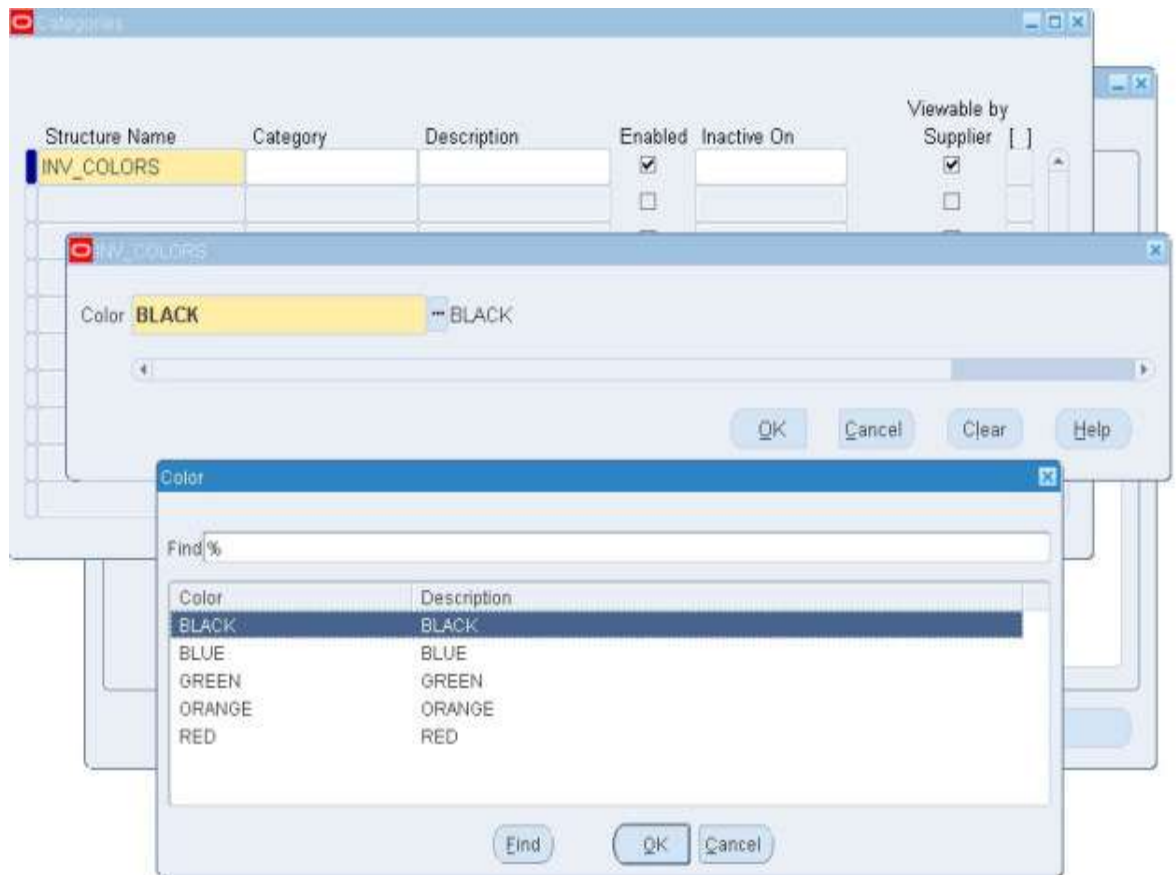
- Next we create our category set.

    Navigation Setup: Items: Categories: Category Sets
    Fill in the category set name: INV_COLORS_SET
    The description: Inventory Color Set
    The Flex Structure: INV_COLORS
    The Controlled: Org Level
    Default Category: BLACK

- After creating the category set we can assign it to any items