Overview of key business processes in ERP (SAP)

Part 1: Logistics

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Course Content

1. Overview of SAP as a typical ERP
2. Key business processes – Logistics
   - Sales and Distribution
   - Materials Management
   - Production Planning
   - Quality Management
   - Plant Maintenance
3. Demo and Hands-on
Overview of SAP System

- Full name of SAP translates into English from German as “Systems, Applications and Products in Data Processing”
  - The full name of SAP is rarely used now
- SAP is pronounced as “ES-AYE-PEE” and not “SAP”
- SAP’s architecture is based on “3-tier” client-server technology (GUI layer, application layer and database layer)
  - Hence the name “R/3”
  - “R/3” does not stand for “Release 3”
- ABAP/4 (Advanced Business Application Programming Language Version 4) is the proprietary programming language in which the SAP product is programmed and customisation done
  - SAP’s “honeycomb structure” depicts the “core R/3 modules”
- SAP has categorised basic business processes in an organisation.
  - These “building blocks” of processes are called “modules”
- SAP upgrades to new features through version management
  - The latest version of SAP is mySAP ECC (Enterprise Core Component) 6.0
  - Previously SAP versions were named as 4.xa. The last version is this series was SAP version 4.7. After this SAP discontinued this nomenclature and moved to ECC nomenclature
- To cater to specific country needs, SAP has various “country versions” to be bolt-on the base R/3
  - Country Version for India is called CIN (Country India Version)
- To cater to industry specific requirements, SAP has various Industry Solutions (IS) e.g. IS-Oil for Oil and Gas, IS-Mills for Mill Products, IS-Retail for Retail
  - Many common industry solutions are built into All-in-One solution now
- E-commerce based modules like CRM, SRM are added components to R/3
  - Most features of these components are now built into All-in-One solution

SAP’s famous “honeycomb structure” depicting the core R/3 modules
Overview of SAP System

Basic R/3 modules for SAP are:

- **Sales and Distribution (SD)**
  - Customer Master, Enquiry, Quotation, Sales Order Processing, Pricing, Credit Management, Transportation, etc
- **Materials Management (MM)**
  - Vendor Master, Enquiry, Quotation, Purchase Orders, Pricing, Inventory Management, Inventory Valuation, Stock Transfer, etc
- **Production Planning (PP)**
  - Planning Strategy, MRP, BOM, Routing, Work Center, Production Orders, etc
- **Quality Management (QM)**
  - Inspection Plan, Incoming Quality, In-process Quality, Finished Goods Quality, Quality Certificates, etc
- **Plant Maintenance (PM)**
  - Maintenance Orders, Breakdown Maintenance, Preventive Maintenance, Maintenance Notifications, etc
- **Human Resources (HR)**
  - Payroll, Training, Recruitment, Performance Management, etc
- **Financial Accounting (FI)**
  - Chart of Accounts, Accounts Payable, Accounts Receivables, Invoice Verification, Asset Accounting, etc
- **Controlling (CO)**
  - Cost Center Accounting, Profit Center Accounting, Internal Orders, Product Costing, etc
- **Treasury (TR)**
  - Funds Management, Cash Management, etc
- **Project Systems (PS)**
  - Work Breakdown Structure (WBS), Internal Projects, External Projects, Project Costing, etc
- **Workflow (WF)**
  - Not a separate module actually but the feature is built into most modules
- **Industry Solutions (IS)**
  - Various Industry specific solutions like IS-Oil, IS-Mills, IS-Auto, IS-Banking, IS-Retail, etc
Overview of SAP System

- Non R/3 modules - With the advent of e-business and various other specific business requirements, SAP added new modules around 1998-99
  - CRM - Customer Relationship Management intended to capture sales transactions over the net and also other features like call center activities. This product is a close competitor to Siebel.
  - SRM - Supplier Relationship Management intended to capture purchases over the net
  - PLM - Product Lifecycle Management
  - APO - Advanced Planner and Optimiser intended to provide features of rule based shop floor scheduling and optimisation, global availability checks across multiple plants, transportation optimisation, etc. This product is a close competitor to i2.
  - BW - Business Warehouse intended to provide management reporting and data mining
  - SEM - Strategic Enterprise Management intended to provide financial consolidation for group companies, balance score card, etc
  - DMS - Document Management System
  - EHS - Environment, Health and Safety

- SAP has now reorganised its module based components into process based components and included e-business components into it. But module based terminology is still popularly used in most cases.
  - SCM - includes erstwhile MM, PP, PM, APO and SRM modules
  - CRM - includes erstwhile SD and CRM modules
  - Financials - includes erstwhile FI, CO, SEM and BW modules
  - PLM - includes erstwhile QM and PLM modules
Overview of SAP System

- Technical areas of SAP consist of:
  - ABAP
  - BASIS

- ABAP involves programming in ABAP language for customisation popularly called “RICE”
  - Reports (customised reports)
  - Interfaces (with other systems)
  - Conversions (for migrating data from legacy system to SAP)
  - Enhancements (to address unique business conditions by writing a piece of code through “user exits” or “module pool”)

- Minimum customisation is strongly recommended for:
  - Faster testing
  - Easier maintenance
  - Easier upgrade

- SAP has introduced Netweaver technology which is an SOA (Service Oriented Architecture) in 2003

SAP identified “user exit” at pre-defined points in source code

You can write your own code here and return to source code

You will require a special key from SAP to modify “source code”. It is strongly discouraged as SAP may consider to withdraw its warranty support if source code is modified

SAP’s Source Code
Overview of SAP System

- Technical areas of SAP consist of
  - ABAP
  - BASIS

- BASIS involves
  - Server sizing
  - SAP system installation
  - Database administration
  - Performance tuning
  - Transports (i.e. transporting configuration and customisation from one system to another)
  - User authorisations
  - “Patch” and “Hot Pack” applications
    - Patches or hot packs are pieces of “correction codes” released by SAP from time to time or when there is a product problem
  - SAP version upgrade
SD: Sales and Distribution

Sales & Distribution
SD Overview

- Inquiry
- Quotation
- Sales Order
- Delivery to Customer
- Goods Issue
- Invoicing
- Pricing
- Picking
- Packing
- Transportation
- Materials Planning
- Purchasing
- Production
- Goods Receipt
- Customer Stock
Process Chain: Sales Distribution

**Inbound Logistics from Materials Management**
- Create pick list
- Create transportation work list
- Create loading work list

**Outbound Logistics to Customer**
- Support Customer Sales (Customer Info Analysis) - Optional -
- Process Customer Inquires - Optional -
- Provide Customer Quotations - Optional -

**Sales/Distribution Chain**
- Receive Payment
  - FI
- Create Invoice
  - FI/CO/PA
- Issue Goods (Ship Product)
  - FI
  - MM
- Create Delivery Note
- Create Sales Order
  - FI/CO/PA
  - MM
  - PP

- Check product availability
- Determine pricing
- Estimate delivery schedule
- Determine conditions of sale

**Inbound Logistics from Materials Management**

**Outbound Logistics to Customer**

**Sales/Distribution Chain**

**Support Customer Agreements - Optional -**

**Provide Customer Quotations - Optional -**

**Process Customer Inquires - Optional -**

**Support Customer Sales (Customer Info Analysis) - Optional -**

**Inbound Logistics from Materials Management**

**Outbound Logistics to Customer**

**Sales/Distribution Chain**

**Support Customer Agreements - Optional -**

**Provide Customer Quotations - Optional -**

**Process Customer Inquires - Optional -**

**Support Customer Sales (Customer Info Analysis) - Optional -**
Order Entry

Credit Management

Dynamic Availability Check

Cash Forecast

Sold to party: C100

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<th>Qty.</th>
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<td>1507</td>
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Delivery/Shipmenet Processing

Sold to party: C100

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Ship to party: C100

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Credit Management

Static Availability Check

Order

Picking

Packing

Transportation

Picking List

12-Jul-08
Picking/Packing

1. Sales Order
2. Delivery
3. Picking Request
4. Picking Confirmation
5. Goods Issue
6. Picking Request
7. Picking Confirmation
8. Print Picking List
9. Picking without Picking Confirmation
10. Picking with Picking Confirmation
Invoicing

- Profit Center Accounting/Profitability Analysis
- Accounts Receivable/General Ledger
- Cash Forecast
- Single Invoices
- Collective Invoices
- Invoice Lists
- Credit/Debit Notes
- EDI

Invoicing
MM Overview

Materials Management

SAP R/3
MM Overview

Material requirement planning

External procurement
Purchasing

Internal procurement
Production

Invoice verification

Goods receipt

Goods issue

Transfer posting

Warehouse management

Inventory management

Master data
Material
Batch
Vendor
Customer
G/L
Storage bins

Internal and external accounting

Sales and distribution
Material - Central Master
“Record” for Logistic

Product - 123
- Inventory
- Quality
- Sales Information
- Production Information

Raw Material - 456
- Inventory
- Purchasing
- Desc:---------------------

123

456
Data in the Vendor Master

<table>
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<th>Maintenance Level</th>
<th>Company Code</th>
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<td>Client</td>
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<tr>
<td>Purchase Organization</td>
<td>Company Code</td>
</tr>
<tr>
<td>• Mandatory maintenance at the Purchasing Organization Level</td>
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</tr>
<tr>
<td>• Optional Maintenance at the Plant Level, the Vendor Sub-Range Level or a combination of the two</td>
<td>Company Code</td>
</tr>
</tbody>
</table>

General Data
- Address
- Phone and Fax Number
- Control Data

Purchasing Data
- Terms of Payment
- Contact Person
- Minimum Order Value

Account Data
- Payment Terms
- Payment Method
- Accounting Clerk
Goods Movement

Delivery

Ad hoc.

Goods Receipt

Production

Inventory

Goods Issue

Goods Issue

Transfer Posting

Goods Movement

Consumption

Samples

Sales Order
Invoice Verification

Orders / Projects / Cost centers
G/L accounts / Accounts payable
Payment

Tolerance Check?
Blocked Invoice
Release of Blocked Invoice

Delivery Invoice
Preliminary Posting
Automatic Price Update

Vendor 3
Invoice

Invoice Verification

12-Jul-08
PP Overview

Production Planning...

SAP R/3
Production : Process Chain

Inbound Logistics from Procurement or Production Chain

- Settle Production Order
  - FI
  - CO

- Transfer Produced Goods to Inventory
  - FI

- Confirm production of goods is completed

- Produce Goods

- Withdraw materials from inventory (automatic/manual)
  - MM

Production Chain

Outbound Logistics to Materials Management or Sales Chain

- Determine Production Requirements
  - via MRP Output or Manually

- Create production order (via conversion of planned order to production order or manually)

- Check material availability (Automatic)

- Release Production Order

- Print shop floor papers (actual workorders)

Archive/Delete Order
Material Requirement Planning

- Stochastic Planning
- Deterministic Planning

Bill of Material

Demands
3. Qrt 4. Qrt

Capacity Planning
Lot Sizing Procedures
Net Change

Quantity: 12,000

Praxis Business School
CELEBRATE YOUR WORTH
MRP - Planning Procedures

- Deterministic MRP
- Consumption-Based Planning
  - Forecast-Based Planning
  - Reorder Point Planning
  - Automatic Reorder Point
  - Manual Reorder Point
Production Control

Planned Orders

Open Production Order

Release Production Order

Goods Issue

Costs

MM

FI

CO
QM Overview

Quality Management

SAP R/3
QM in Logistics

Goods receipt
- History-dependent intensity of quality inspections

Production
- Inspection during production
- Defects recording in QM
- Control charts

Goods issue
- Quality management in SD (certifies quality)
PM Overview

SAP R/3

Plant Maintenance
Plant Maintenance - Overview

- Master Data
- Pre-defined work steps
- Notifications
- Create Work Orders
- Parts/Supplies
- External Services
- Material Requisitions
- Reporting
- Emergencies
- Labor
- Special Tools
- Preventive/Predictive Maint. WO’s
- Schedule WO’s
- Close and Settle WO
- Shop Papers

Pre-defined work steps
Notifications
Create Work Orders
Parts/Supplies
External Services
Material Requisitions
Reporting
Emergencies
Labor
Special Tools
Preventive/Predictive Maint. WO’s
Schedule WO’s
Close and Settle WO
Shop Papers
Next Session: Overview of key business processes in ERP

Part II: Financials and HR

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