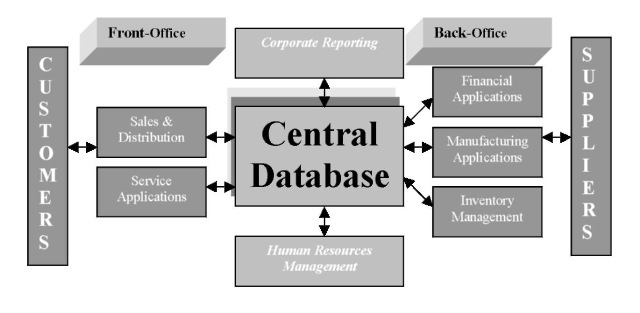
**PRACTICAL: 1**

**AIM:Introduction to ERP System and Identification of ERP Domain.**

**ERP** **(enterprise resource planning**)

**ERP** is short for enterprise resource planning.ERP (enterprise resource planning) is an industry term for the broad set of activities that helps a business manages the important parts of its business.

Enterprise resource planning (ERP) is process management software that allows an organization to use a system of [integrated](http://www.webopedia.com/TERM/I/integrated.html) applications to manage the business and automate many [back office](http://www.webopedia.com/TERM/B/back_office.html) functions related to technology, services and human resources.



**ERP system**

ERP software integrates all facets of an operation, including product planning, development, manufacturing, sales and marketing.

ERP software is considered an [enterprise application](http://www.webopedia.com/TERM/E/enterprise_application.html) as it is designed to be used by larger businesses and often requires dedicated teams to customize and analyze the data and to handle upgrades and deployment. In contrast, [Small business ERP](http://www.webopedia.com/TERM/S/small_business_erp.html)applications are lightweight business management software solutions, customized for the business industry you work in.

**Evolution of ERP**

ERP (Enterprise Resource Planning) is the evolution of Manufacturing Requirements Planning (MRP) II. From business perspective, ERP has expanded from coordination of manufacturing processes to the integration of enterprise-wide backend processes.

|  |  |  |
| --- | --- | --- |
| ***Timeline*** | ***System*** | ***Description*** |
| 1960s | Inventory Management & Control | Inventory Management and control is the combination of information technology and business processes of maintaining the appropriate level of stock in a warehouse. The activities of inventory management include identifying inventory requirements, setting targets, providing replenishment techniques and options, monitoring item usages, reconciling the inventory balances, and reporting inventory status. |
| 1970s | Material Requirement Planning (MRP) | Materials Requirement Planning (MRP) utilizes software applications for scheduling production processes. MRP generates schedules for the operations and raw material purchases based on the production requirements of finished goods, the structure of the production system, the current inventories levels and the lot sizing procedure for each operation. |
| 1980s | Manufacturing Requirements Planning (MRP II) | Manufacturing Requirements Planning or MRP utilizes software applications for coordinating manufacturing processes, from product planning, parts purchasing, inventory control to product distribution. |
| 2000s | Enterprise Resource Planning (ERP) | Enterprise Resource Planning or ERP uses multi-module application software for improving the performance of the internal business processes. ERP systems often integrates business activities across functional departments, from product planning, parts purchasing, inventory control, product distribution, fulfilment, to order tracking. ERP software systems may include application modules for supporting marketing, finance, accounting and human resources |

**The Evolution of ERP from 1960s To 1990s**

### Benefits of ERP for your Business

1. **Integration across all business processes** - To realize the full benefits of an **ERP system** it should be fully integrated into all aspects of your business from the customer facing front end, through planning and scheduling, to the production and distribution of the products you make.
2. **Automation enhances productivity -** By automating aspects of business processes, ERP makes them more efficient, less prone to error, and faster. It also frees up people from mundane tasks such as balancing data.
3. **Increase overall performance** - By integrating disparate business processes, ERP ensures coherence and avoids duplication, discontinuity, and people working at cross purposes, in different parts of the organisation. The cumulative positive effect when business processes integrate well is overall superior performance by the organisation.
4. **Quality Reports and Performance Analysis -** Analysis on ERP will enable you to produce financial and boardroom quality reports, as well as to conduct analysis on the performance of your organisation.
5. **Integrates across the entire supply chain** - A best of breed ERP system should extend beyond your organisation and integrate with both your supplier and customer systems to ensure full visibility and efficiency across your supply chain.

**Business Integration using ERP**

**ERP integration** is the process of integrating separate, stove-pipe ERP (Enterprise Resource Planning) systems with each other or with other enterprise information resources, to meet various B2B demands. Originally, ERP systems, such as SAP, PeopleSoft, Oracle and Lawson, were built with the purpose of tightly integrating processes within an enterprise.

This includes planning, manufacturing, and sales, while more recent ERP software products encompass marketing, inventory control, order tracking, customer service, finance and human resources as well.

In every ERP implementation, there comes a time where these wide-reaching, all-encompassing systems need to communicate with other 3rd party solutions and legacy applications.

**Opentaps**

opentaps Open Source ERP + CRM's goal is to combine the best of both open source and commercial software.  We want to offer users the unlimited flexibility and innovation that comes with free access to the source code, along with the expertise and professional support of high quality commercial software.

**Industry Solution**

A business solution that supports both operational and administrative processes of organizations, this single solution comes with localizations—in the box—for 36 countries.

With a specialized focus on manufacturing, retail, service industries, and public sector, Opentaps includes capabilities such as financial management, manufacturing, retail, business intelligence and reporting, supply chain management, and human capital management.

**Modules**

**Opentapsincludes the following modules:**

* CRM
* SCM
* Inventory, Manufacturing, and Purchasing
* Financials and Reporting

**Technology**

* Enterprise Java J2EE foundations using Apache Tomcat and OFBiz projects
* Domain driven architecture embraces object-oriented development model with integrated Hibernate persistence and spring framework
* Rich AJAX user interface development with Google Web Toolkit
* Business intelligence and reporting with Pentaho and Jasper Reports
* Compatibility with MySQL, PostgreSQL, Oracle, and Microsoft SQL Server

**Client/Users**

* Toyota
* Honeywell
* mBox
* ToolEast
* Icebird
* Sempione

**Company**

**Honeywell :**

Honeywell International (NYSE: HON) is responsible for providing spare parts, repair, and maintenance services to both commercial airlines and governments. In one project for the United States government, Honeywell provides complete repair and maintenance services for the engine of a major vehicle system for the United States Department of Defense. This includes maintaining an adequate supply of the engine and its spare parts both in the field and at four maintenance depots around the world over the entire multi-year contracted time period.

To fulfill its obligations, Honeywell needed to plan the manufacturing of the engine and its associated parts over the contract period. This meant it had to project demand for both the engine and the parts over several years and take into account field demand for the engine, the bill of materials which specified its parts, and the existing stock of the engine and parts in the various maintenance depots. The particular engine has over 1600 parts in a nine-level bill of material. The analysis also had to account for the ability of the depots to refurbish some of the spare parts so that they could be used again for future maintenance. Finally, Honeywell needed to examine multiple demand scenarios to determine the adequate level of stock.

Traditionally, this complex analysis was done by 25 Excel spreadsheets with custom models that used pivot tables and lookups. Running the analysis was then both slow and time-consuming, and updating the analysis with new scenarios could take several weeks or longer. In 2007, a team from Honeywell International approached [**Logistics ModelingCenter, Inc.**](http://www.logmodctr.com/), (LMCI) of Hampton, VA to discuss a better solution. Their original goals were to create a centralized database for all the demand forecast data, and then develop a custom model to analyse the data and project inventory levels and production requirements.

LMCI, however, suggested a novel approach: They recommended that Honeywell use the opentaps Open Source ERP + CRM system and leverage its existing supply chain management features for inventory planning, instead of rebuilding its custom models from scratch.

"When we first mentioned 'ERP' to the Honeywell team, they were reluctant," notes Jim Carrillo, President of LMCI. "To them, 'ERP' was a four letter word that meant big, expensive, and time-consuming. However, we pointed out that using opentaps had some important advantages. First, because opentaps is an open source ERP system, it was free. More importantly, it was much easier to implement compared to the large commercial ERP systems that the Honeywell team was used to. Finally, opentaps came with out-of-the-box features for inventory planning which already followed best practices, so that gave us a lead coming out of the starting gate versus developing a custom solution from scratch."

Working with Open Source Strategies, Inc. the lead developer of opentaps, LMCI then proceeded to implement a specialized solution which integrated inventory data and projected demand from Honeywell into the opentaps system. This data was created in opentaps as sales orders and warehouse inventory. opentaps then ran through its Material Resources Planning (MRP) system which was part of its purchasing and supply chain management application, projected for demand for both the engine and all 1600 parts, level by level down the bill of materials. It then created requests to transfer inventory and parts between the maintenance depots as needed and finally created a multi-year master production schedule.

"What was really interesting here is that we were able to tap into the power of an ERP system without having to implement a full ERP system," says Si Chen, Principal of [**Open Source Strategies, Inc.**](http://www.opensourcestrategies.com/) "People are too used to thinking of ERP as a big black box to run an entire enterprise. opentaps can do that, but it can also be a toolbox of best practices for solving problems like inventory planning."

The entire project took less than three months for the combined Logistics ModelingCenter and Open Source Strategies team to complete, including customizations, reports, and documentation. "Open source definitely made a difference: leveraging the existing features from opentaps allowed us to complete the project much faster than originally planned," notes Jim Carrillo of LMCI.