Integrated systems

or

Enterprise Resource Planning (ERP) Systems

ERP - Definition

- ERP is a process of managing all resources and their use in the entire enterprise in a coordinated manner

ERP system: Definition

- ERP is a set of integrated business applications, or modules which carry out common business functions such as general ledger, accounting, or order management

What is ERP?

- Enterprise Resource Planning
- Support business through optimizing, maintaining, and tracking business functions
- Broken down into business processes
  - HRM
  - Distribution
  - Financials
  - Manufacturing

What is ERP

- ERP utilizes ERP software applications to improve the performance of organizations' resource planning, management control and operational control.
- ERP software is multi-module application software that integrates activities across functional departments, from
    - product planning,
    - parts purchasing,
    - inventory control,
    - product distribution,
    - to order tracking.
- ERP software may include application modules for the finance, accounting and human resources aspects of a business.

ERP

- Enterprise resource planning (ERP)
  - Attempts to integrate all departments and functions across a company (e.g., financial, manufacturing, human resources)
  - Single computer system containing data to facilitate the needs of those different departments.
    - single, integrated software program
    - single database

What makes ERP different

- Integrated modules
- Common definitions
- Common database
- Update one module, automatically updates others
- ERP systems reflect a specific way of doing business
- Must look at your value chains, rather than functions

The Goal of an ERP System

- The goal of ERP is to improve and streamline internal business processes, which typically requires reengineering of current business processes.

Benefits of ERP

- Common set of data
- Help in integrating applications for decision making and planning
- Allow departments to talk to each other
- Easy to integrate by using processed built into ERP software
- A way to force BPR (reengineering)

Vendors


SAP


ORACLE


PEOPLE
Soft


SIEBEL
IT'S ALL ABOUT THE CUSTOMER™


global™
forward faster


JDEdwards
Alliance Partner


Microsoft Dynamics

ERP Implementation Options

- The Big Bang
  - Companies cast off all of their legacy systems and implement a single ERP system across the entire company
  - Out with the old system, in with the new system
- Franchising Strategy
  - Best of breed approach within each function
  - Install independent ERP components within each functional area; integrate functional ERP systems to the extent necessary
- Slam-Dunk
  - Focus on implementing ERP for only a few key processes
  - Plan to implement more ERP components in the future

Difficulty in implementation

- Very difficult
- Extremely costly and time intensive(Typical: over $10,000,000 and over a year to implement)
- Company may implement only certain modules of entire ERP system
- You will need an outside consultant

Characteristics

ERP (Enterprise Resource Planning) systems typically include the following characteristics:

- An integrated system that operates in real time (or next to real time), without relying on periodic updates.
- A common database, which supports all applications.
- A consistent look and feel throughout each module.
- Installation of the system without elaborate application/data integration by the Information Technology (IT) department.

The Components of an ERP System

The components of an ERP system are the common components of a Management Information System (MIS).

- **ERP Software** - Module based ERP software is the core of an ERP system. Each software module automates business activities of a functional area within an organization. Common ERP software modules include product planning, parts purchasing, inventory control, product distribution, order tracking, finance, accounting and human resources aspects of an organization.

- **Business Processes** - Business processes within an organization falls into three levels - strategic planning, management control and operational control. ERP has been promoted as solutions for supporting or streamlining business processes at all levels. Much of ERP success, however, has been limited to the integration of various functional departments.

- **ERP Users** - The users of ERP systems are employees of the organization at all levels, from workers, supervisors, mid-level managers to executives.

- **Hardware and Operating Systems** - Many large ERP systems are UNIX based. Windows NT and Linux are other popular operating systems to run ERP software. Legacy ERP systems may use other operating systems.

Examle Components

- Transactional database
- Management portal/dashboard
- Business intelligence system
- Customizable reporting
- External access via technology such as web services
- Search
- Document management
- Messaging/chat/wiki
- Workflow management

ERP Benefits

Advantages

ERP systems centralize business data, bringing the following benefits:

- They eliminate the need to synchronize changes between multiple systems—consolidation of finance, marketing and sales, human resource, and manufacturing applications
- They bring legitimacy and transparency in each bit of statistical data.
- They enable standard product naming/coding.
- They provide a comprehensive enterprise view (no "islands of information"). They make real-time information available to management anywhere, any time to make proper decisions.
- They protect sensitive data by consolidating multiple security systems into a single structure.

ERP Benefits

- Generally ERP deployment lead to the tremendous benefits which are direct and indirect.

- Direct benefits include: improved efficiency, information integration for better decision making, faster response time to customer queries, etc.

- Indirect benefits include: better corporate image, improved customer goodwill, customer satisfaction and so on.

Benefits

- ERP can greatly improve the quality and efficiency of a business. By keeping a company's internal business process running smoothly, ERP can lead to better outputs that will benefit the company such as customer service, and manufacturing.
- ERP provides support to upper level management to provide them with critical decision making information. This decision support will allow the upper level management to make managerial choices that will enhance the business down the road.
- ERP also creates a more agile company that can better adapt to situations and changes. ERP makes the company more flexible and less rigidly structured in an effort to allow the different parts of an organization to become more cohesive, in turn, enhancing the business both internally and externally.

ERP Benefits

- Fundamentally the potential benefits are:-
  - Reduction of Lead-Time
  - On-Time Shipment
  - Reduction in cycle time
  - Better customer satisfaction

ERP Benefits

- Others are
  - Improved supplier performance
  - Increased Flexibility
  - Reduction in quality costs
  - Improved resource utility
  - Improved information accuracy and decision-making ability

Reduction of Lead-Time

- The lead-time is the elapsed time between placing an order and receiving it. It has a great role in purchasing and inventory control.

- The consequences of the non-availability of an item that is required for production can result in a lot of problems such as missing the delivery schedules, losing the customer to the competition.

- So the company must ensure the lead-time to be as minimum as possible.

Reduction of Lead-Time

- In order to reduce the lead-times, the organization should have an efficient inventory management system, which is integrated with the purchasing, production planning and production departments.

- ERP systems help in automating this task and thus, make the inventory management efficient and effective.

- ERP systems, by virtue of their integrated nature and by the use of latest technologies such as EFT (Electronic Funds Transfer) and Electronic Data Interchange (EDI), reduce the lead-times and make it possible for the organizations to have the items at the time they are needed (just-in-time inventory systems).

On-Time Shipment

- With ERP systems, businesses are not limited to a single manufacturing method, such as 'make-to-stock' or 'make-to-order'.

- Instead, many manufacturing and planning methods, can be combined within the same operation, with unlimited flexibility to choose the best method or combination of best methods for each product at each stage throughout its life cycle.

- ERP systems ensure on-time delivery of goods to customers by integrating the various business functions and automating the procedures and tasks.

Reduction in Cycle Time

- Cycle time is the time between receipt of the order and delivery of the product.
- Manufacturing spectrum can be viewed in terms of **make-to-order** where cycle time and cost of production are high or **make-to-stock**.
- In both cases ERP systems can reduce the cycle time.

Improved Resource Utilization

- Manufacturers place increased emphasis upon planning and controlling capacity.
- The creation of an accurate, achievable production schedule requires the availability of both material and capacity.
- The capacity planning features of most ERP systems, offer both rough-cut and detailed capacity planning.
- The system load each resource with production requirements from Master Production Scheduling, Material Requirements Planning, and Detailed Capacity Planning.

Improved Resource Utilization

- The ERP systems also have simulation capabilities that help the capacity and resource utilization scenarios and choose the best option.

- The efficient functioning of the different modules in the ERP system like manufacturing, materials management, plant maintenance, sales and distribution ensures that the inventory is kept to a minimum level, the goods are produced only as per the demand and the finished goods are delivered to customer in the most efficient way.

- Thus the ERP systems help the organization in drastically improving the capacity and resource utilization.

Better Customer Satisfaction

- Customer satisfaction means meeting or exceeding customers' requirements for a product or service.
- Degree of satisfaction can be assessed using the following measures:-
  - Product or service has the features that are most important to the customer.
  - Response to the customers' demands in timely manner.
  - Product or service is free of defects and perform as expected.

Better Customer Satisfaction

- With the introduction of the web-based ERP systems, the customers can place the order, track the status of the order and make the payment sitting at home.

- Getting the technical support by accessing the company's technical support knowledge base (help desk). Since technical support dept. have all knowledge about products and customers hence customer will be served well which will go inline with improving customer satisfaction.

Improved Information Accuracy and Decision-Making Capability

- In order to manage the information, in order to deliver high quality information to the decision-makers at the right time, in order to automate the process of data collection, collation and refinement, organizations have to make IT an ally (Collaborator), harness (join) its full potential and use it in the best way.

- The major drawbacks of the old systems was that it lacked an integrated approach.

- Information was scattered throughout in which different system existed in every department which make organization to have islands of information within organization.

Improved Information Accuracy and Decision-Making Capability

- An organization cannot function as an islands of different departments.
- The production planning data is required for the purchasing department, the purchasing details are required for the finance department and so on.
- ERP systems help integrating all the information islands which were functioning isolate into a single system. And hence improve executives' decision-making ability.

Improved supplier performance

- The ERP systems contain features which support supplier management and control processes that help organization in managing the supplier relations, monitoring the vendor activities and managing the supplier quality.

Reduced Quality Costs

- The Quality Management Systems in ERP packages support the benchmarking and use of optimal product design, process reengineering, and quality assurance data by all functional departments within the manufacturing enterprise, and the continuous improvement of manufacturing methods.

- The ERP systems also provide tools for implementing Total Quality Management within an organization.

- ERP systems play a significant role in reducing cost of quality by ensuring that the company has an efficient and effective quality assurance and management systems.

Increased Flexibility

- Flexibility is a key issue in the formulation of strategic plans in companies. Sometimes, flexibility means quickly changing something that is being done or completely changing to adjust new product designs.

- Product flexibility is the ability of the operation to efficiently produce highly customized and unique product.

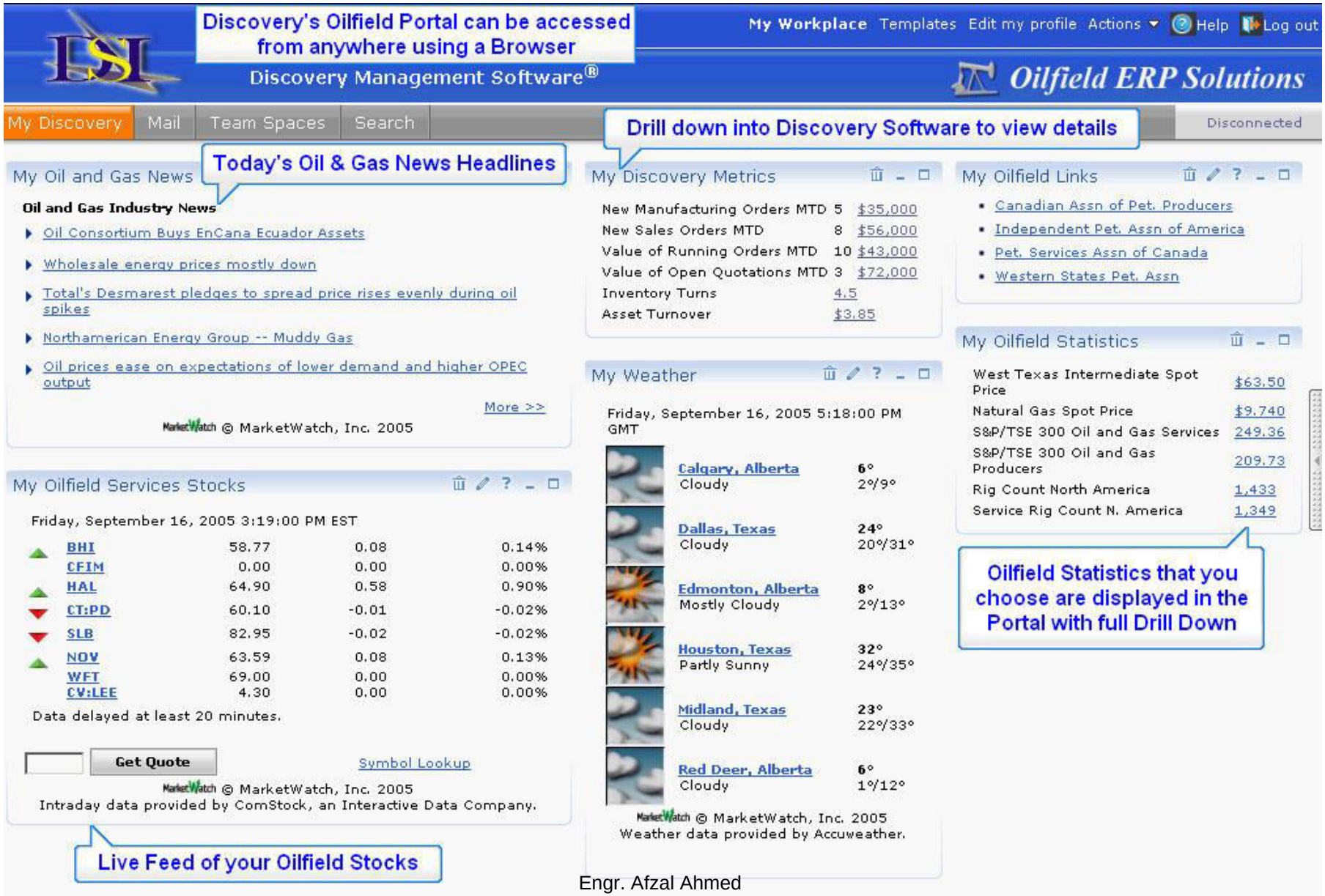
- ERP Systems have the features that increase flexibility in both the organization as whole and manufacturing operations.

- ERP systems help the companies to remain flexible by making the company information available across the departmental barriers and by automating most of the processes and procedures, thus enabling the company to react quickly to the changing market conditions.

Disadvantages

- Customization is problematic.
- Re-engineering business processes to fit the ERP system may damage competitiveness and/or divert focus from other critical activities.
- ERP can cost more than less integrated and/or less comprehensive solutions.
- High switching costs associated with ERP can increase the ERP vendor's negotiating power which can result in higher support, maintenance, and upgrade expenses.
- Overcoming resistance to sharing sensitive information between departments can divert management attention.
- Integration of truly independent businesses can create unnecessary dependencies.
- Extensive training requirements take resources from daily operations.
- Due to ERP's architecture (OLTP, On-Line Transaction Processing) ERP systems are not well suited for production planning and supply chain management (SCM)
- Harmonization of ERP systems can be a mammoth(massive) task (especially for big companies) and requires a lot of time, planning and money.

ERP system for oilfield services company



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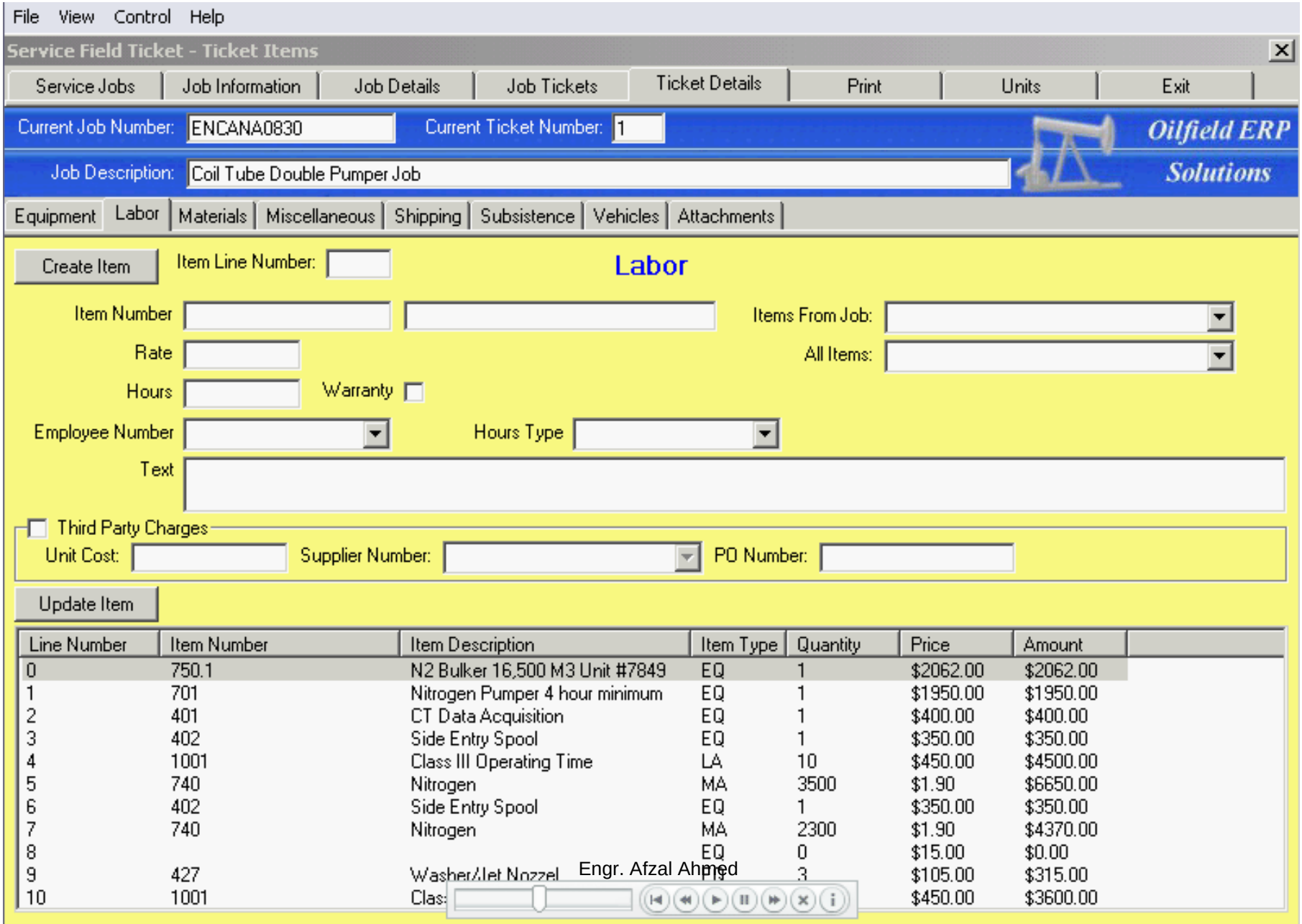
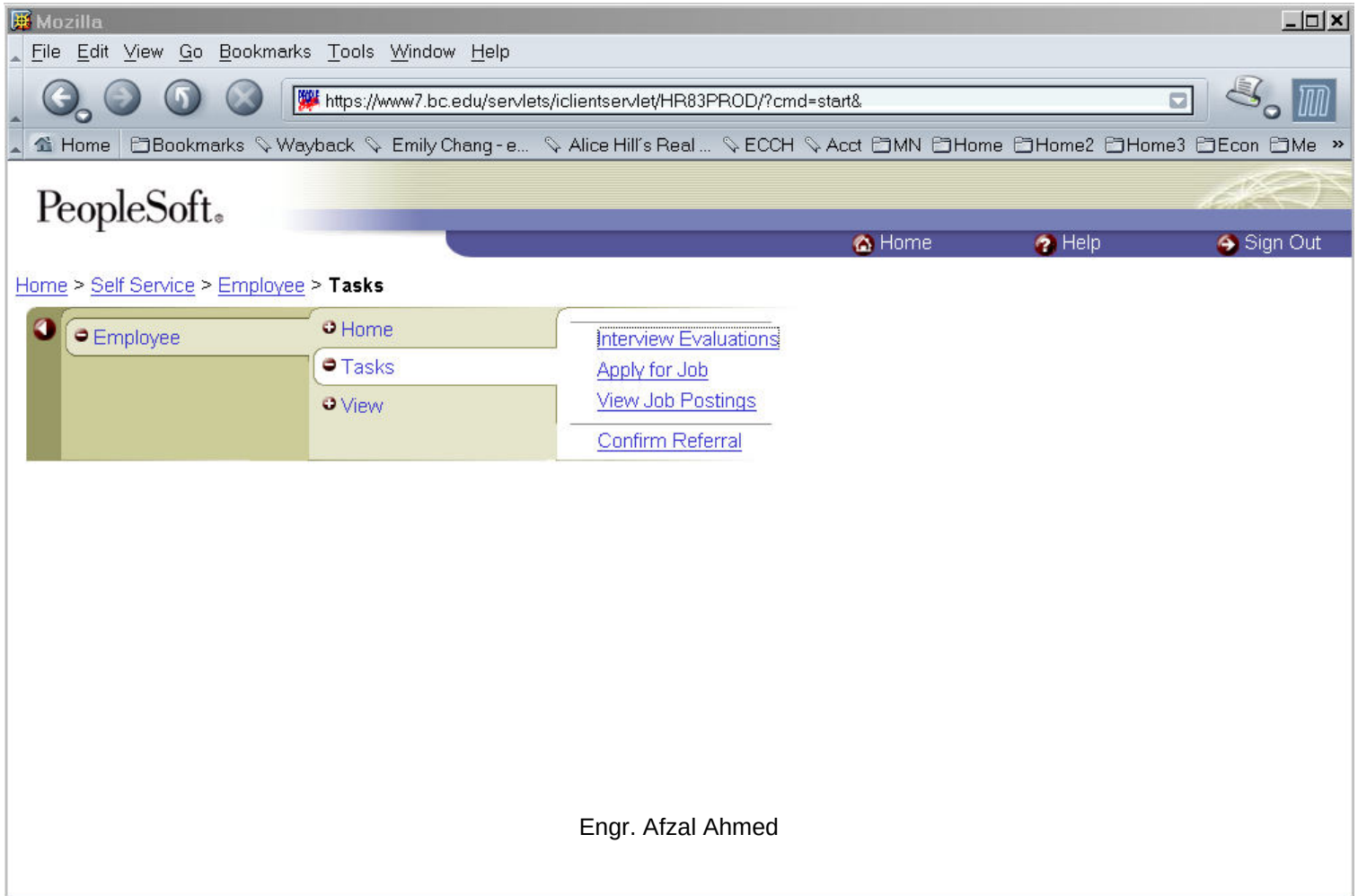
ERP system for oilfield services company



ERP Applications in Services

- Boston College
  - Uses PeopleSoft ERP for HR planning and materials ordering



ERP Systems Example Applications

http://www.aviantes.com/en/details/erp.html