



NPTEL ONLINE CERTIFICATION COURSES

Management Information Systems

Prof. Surojit Mookherjee

VGSoM, IIT KHARAGPUR

Week 03: ERP

Lecture 01 : What is ERP ?

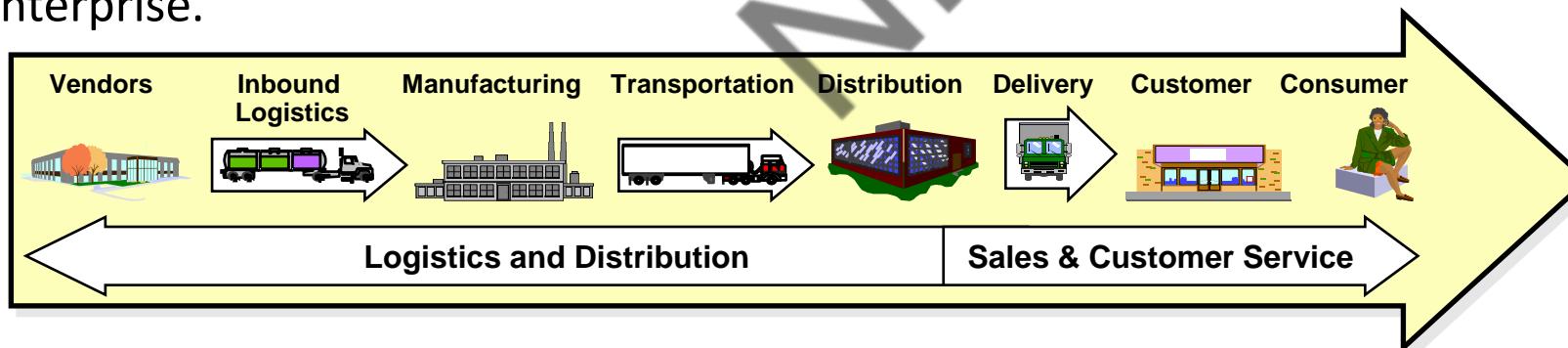
Course Expectations.....

- To make you understand ‘WHY ERP’.
- To help you understand some of the key product features at a very HIGH LEVEL
- How to take the BEST from an ERP.
- To help you understand the REQUIREMENTS from an organization in IMPLEMENTING an ERP
- This course will NOT make you a SAP/ERP consultant

ERP Overview – Defining ERP.....

- **Enterprise:** Any organization that has a set of common goals
- **Resource:** Assets of the enterprise in the form of Man, Machine, Material
- **Planning:** Planning for effective utilization of resources

ERP is integrated information system built on a **centralized database** and **common computing platform** helps in effective usage of enterprise's resources, facilitates the flow of information between all business functions of the enterprise.



ERP Overview – Defining ERP

Enterprise resource planning (ERP) is a method of efficiently utilizing **people, hardware and software to increase productivity and profit.**

Thus simplifying a company's business processes.

ERP may include many software applications or a single (but more complex) software package that smoothly disseminates data required by two or more unique business departments.

ERP Overview – Why ERP....

The need for enterprise resource planning (ERP) software grew with big business' mandate for a **centralized solution to manage all information system requirements.**

An ERP may consist of many different business modules, including:

- Manufacturing / Planning
- Human Resources / Payroll
- Sales
- Materials / Inventory / Purchase
- Supply Chain / Partners
- Finance and Accounting

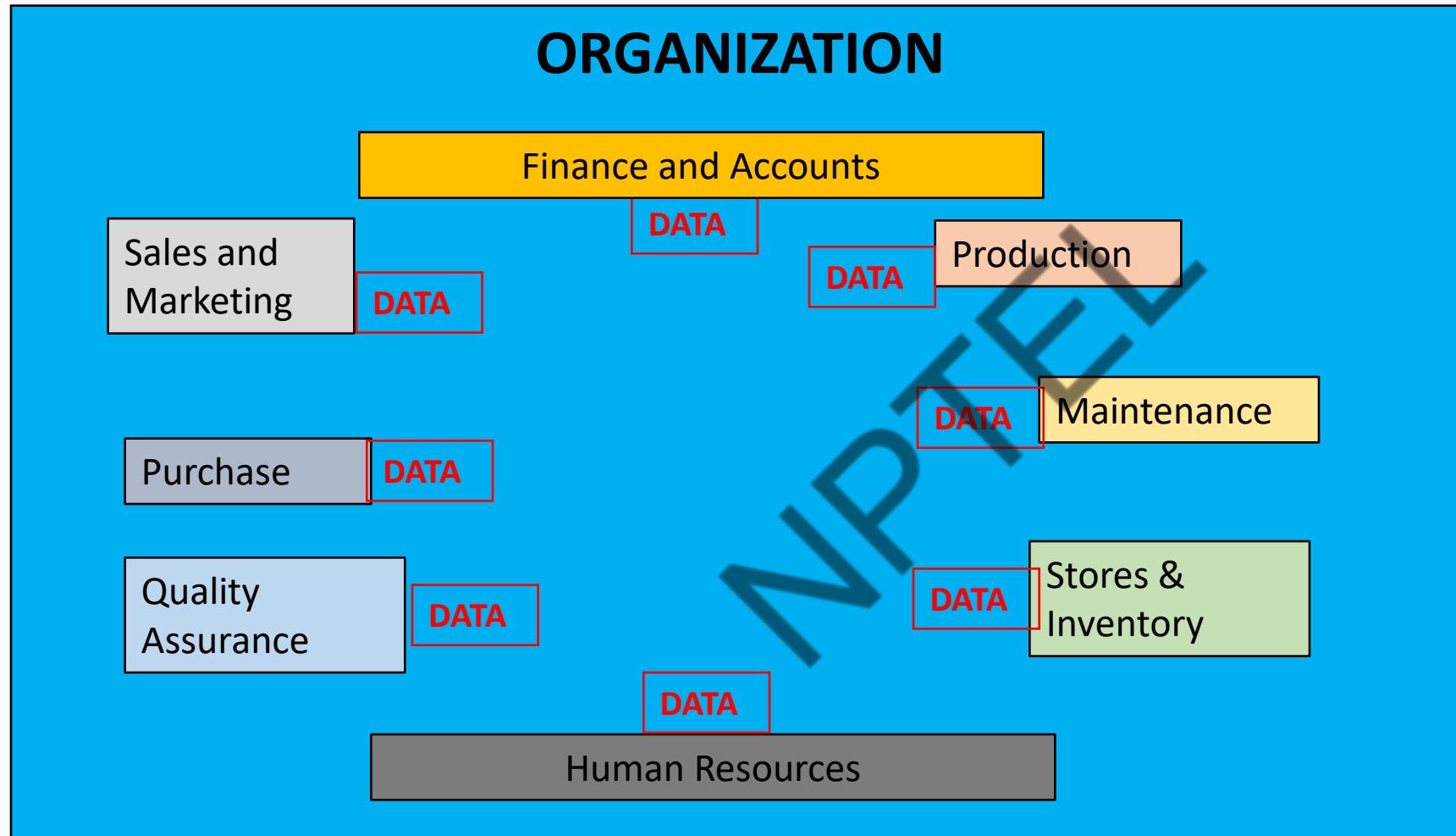
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ERP Overview – Why ERP

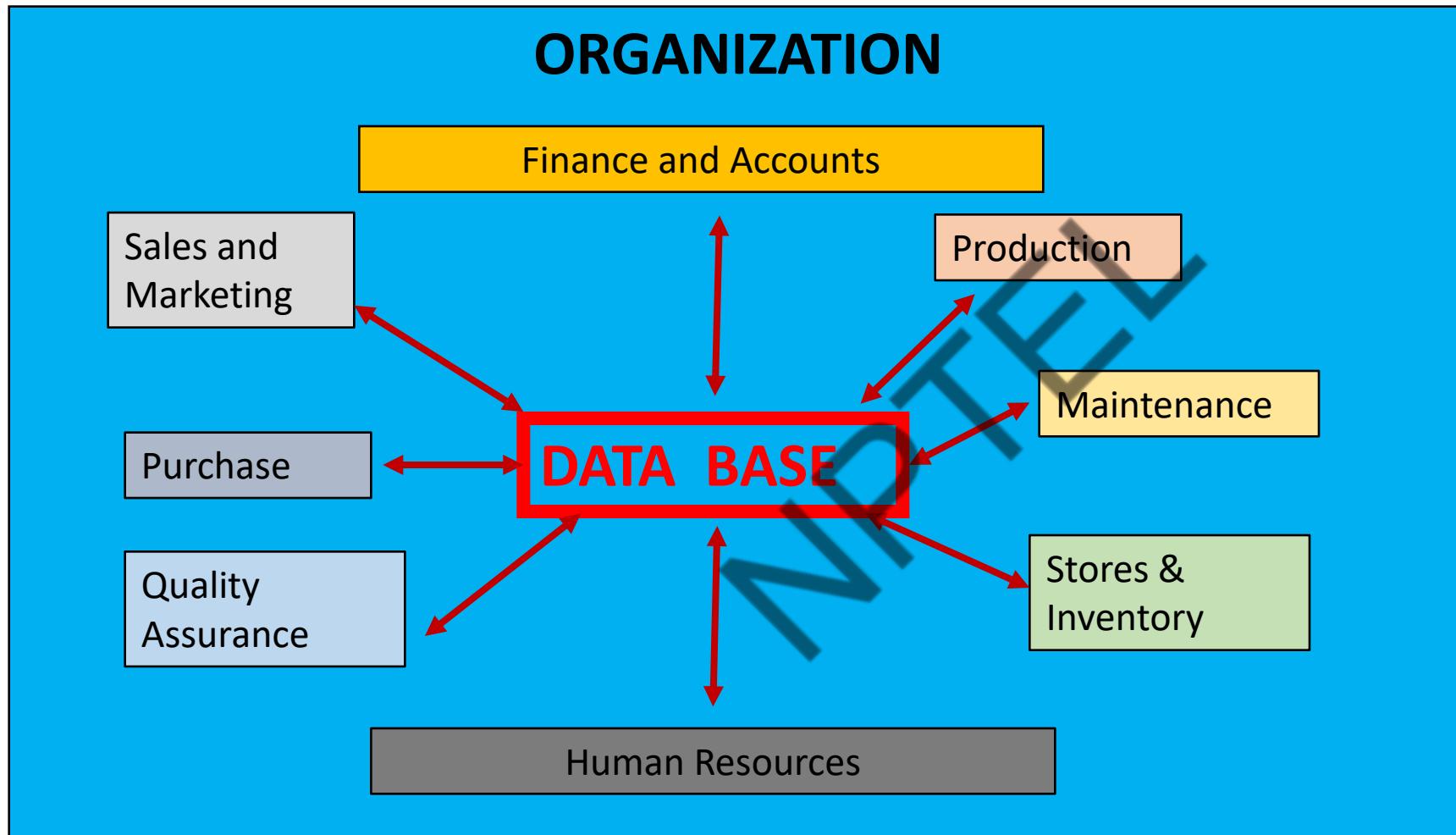
The three Major Drivers:

- From Department To Enterprise
- From Function To Process (e.g. Order to Cash)
- From Functional Silos To Integrated Information System

Stand Alone Solutions – Islands..... PAST

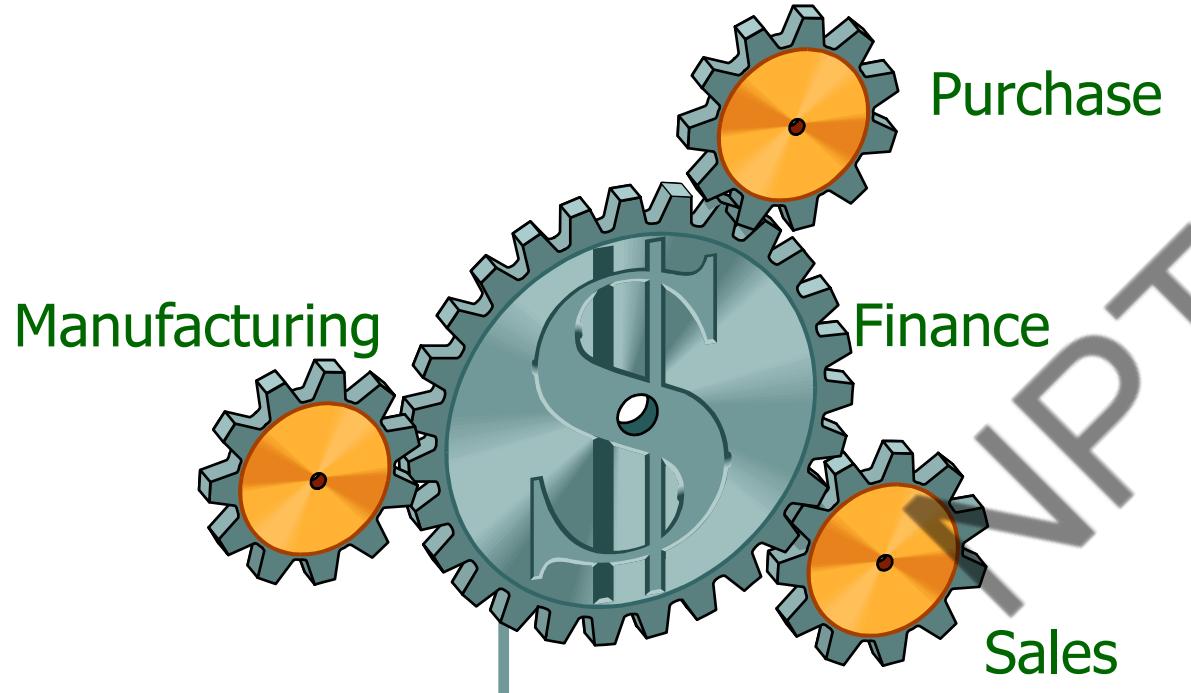


Integrated Platform..... Present



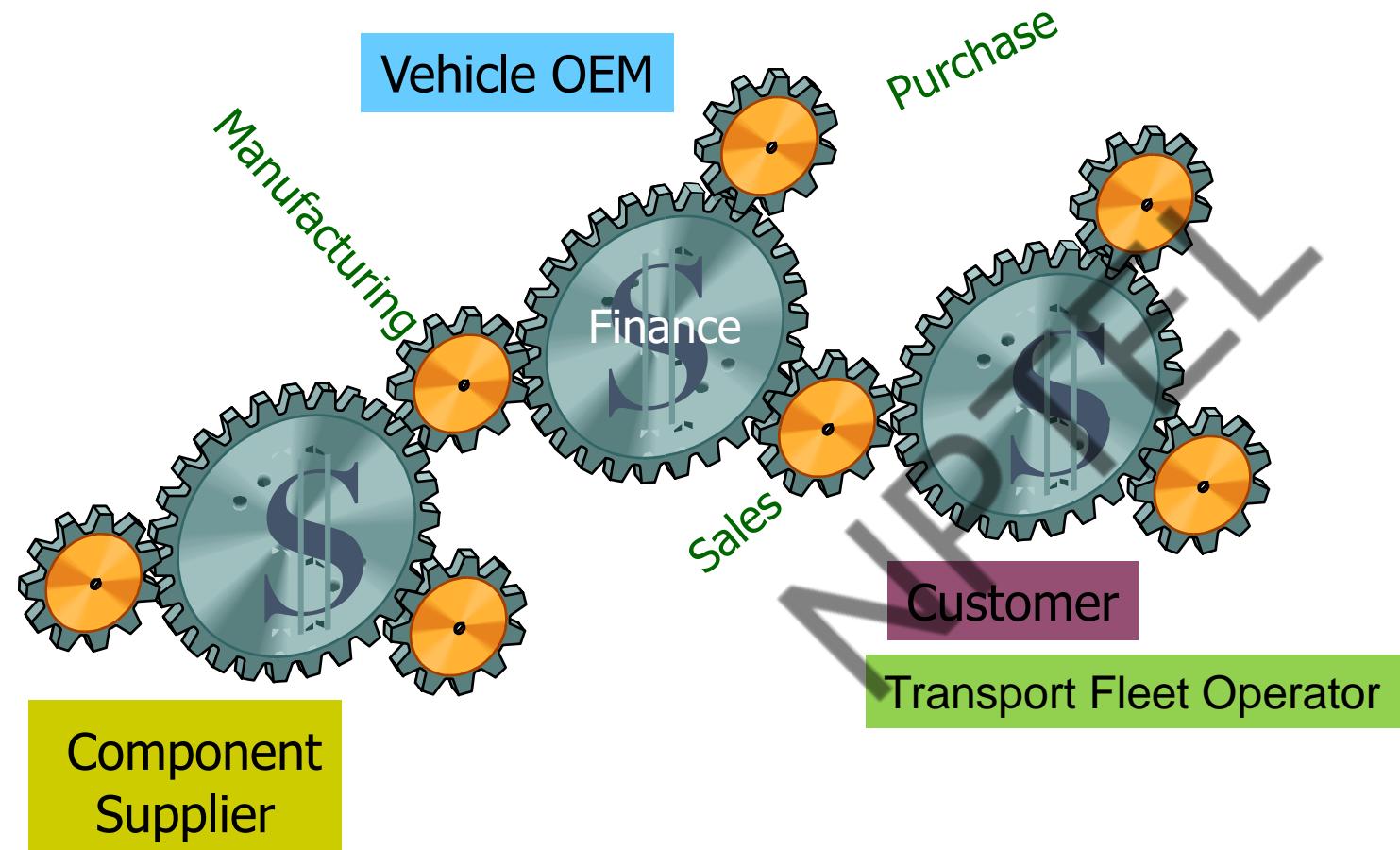
Enterprise Resource Planning....present

... synchronization of Company functions...



**Question – When , Manufacturing happens ,
how do Purchase , Sales and Finance get
impacted ?**

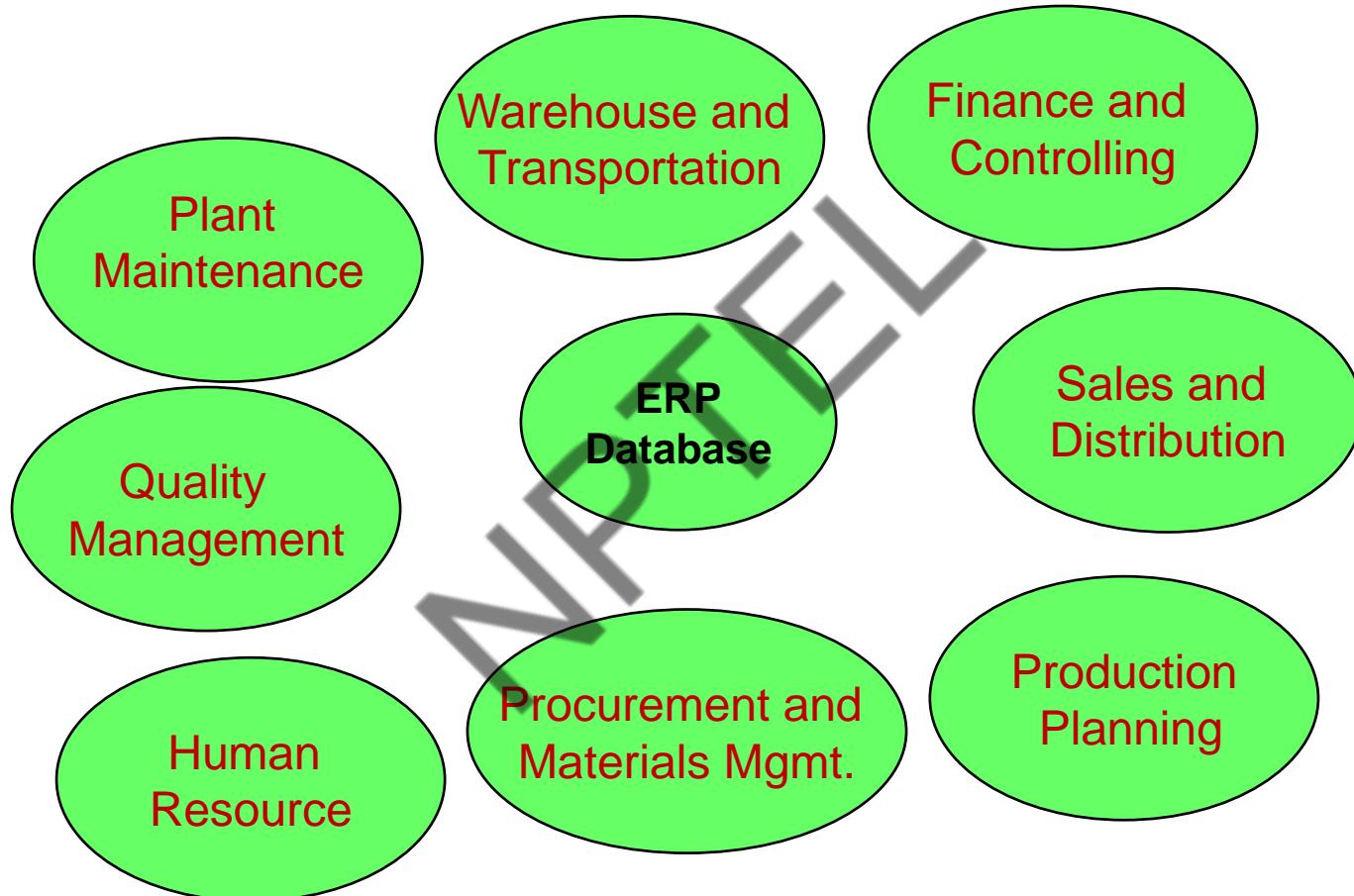
ERP... and extended to the complete value chain...

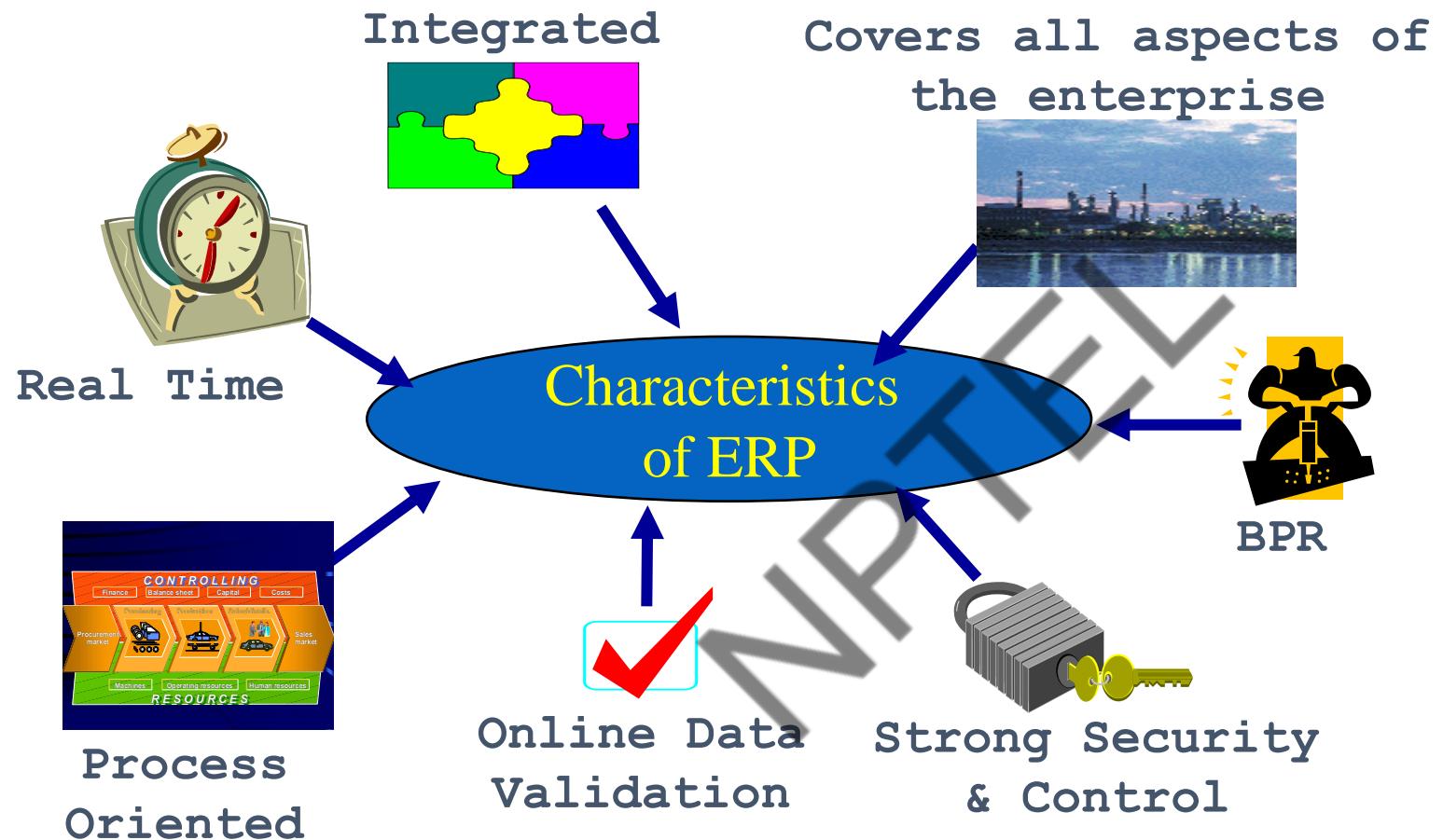


Problems with Information Silos

- ✓ Duplication Of Data and chances of making mistakes
- ✓ No Integration between different Systems
- ✓ No online updation of information
- ✓ No real – time availability of information
- ✓ Multiple data entry , increase possibility of making mistakes
- ✓ Different 'naming' conventions in different departments.

ERPs bring Central Database and Integrated Information System





REFERENCES

- Enterprise Resource Planning : Rajesh Ray
- Enterprise Resource Planning Systems : O'Leary

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Week 03: ERP – Evolution and Benefits

Lecture 02 : Part 2 of 5

ERP Evolution - MRP

ERP systems evolved from MRP (Material Requirement Planning) systems of 60's and 70's.

Advantages

- Provides information on which items to buy or manufacture, how much quantity and on which date.

Disadvantages

- Did not look at available capacity while planning
- Could not replan quickly
- Not integrated with other organizational processes.

ERP Evolution – Closed Loop MRP

Closed Loop MRP was the next evolution after MRP which partially solved some of the MRP issues.

Advantages

- Does a manual feasibility check of MRP plan.
- Provides alerts / triggers if the plan is not feasible.

Disadvantages

- Could not replan quickly
- Not integrated with other organizational processes.

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ERP Evolution – MRP 2

MRP 2 systems were much more stronger compared to MRP / Closed Loop MRP in terms of functionality. These systems were well integrated with several organizational business processes and had multiple modules.

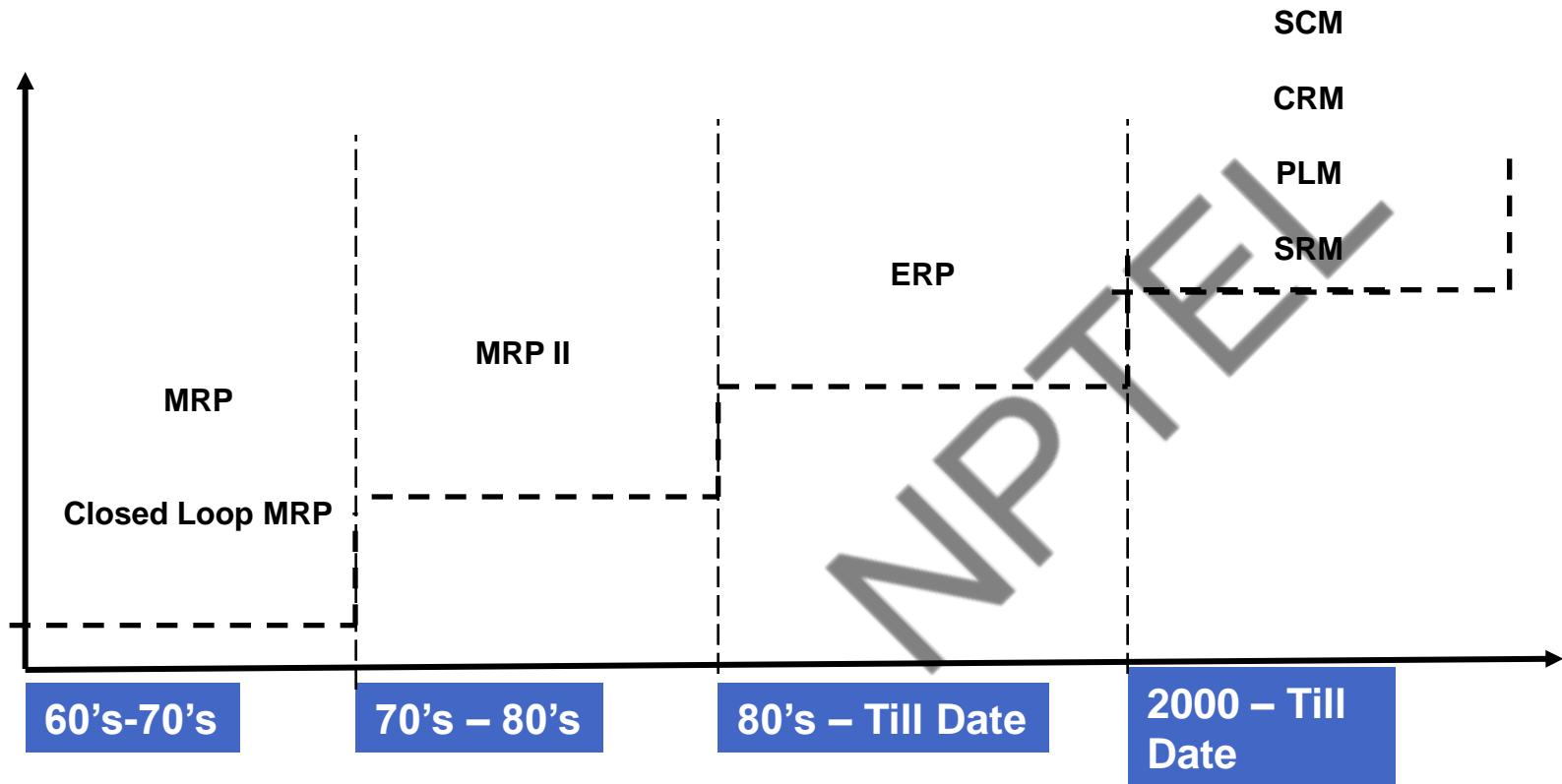
Advantages

- Include processes for Sales planning, Demand management etc.
- Helped in several supply chain execution processes (like Purchase and Production order execution, Sales execution etc.).

Disadvantages

- Not fully integrated with all organization processes (like: HR)

History of ERP and Enterprise Applications



Enterprise Applications = ERP, CRM, SRM, PLM, APS, EAM

ERP – Some Early History of few Leading ERPs

- 1972: Five engineers (IBM) in Mannheim , Germany started the company SAP, with the idea of producing and marketing standard software for integrated business solutions.
- 1975: Richard Lawson, Bill Lawson, and John Cerullo started Lawson Software, a pre-packaged enterprise technology solutions as an alternative to customized business software applications.
- 1977: Jack Thompson (J), Dan Gregory (D), and Ed McVaney (ED) formed JD Edwards. (merged with Oracle ERP)
- 1978 Jan Baan begins The Baan Corporation that offered leading Baan ERP for several years. It is currently known as Infor.
- 1987: PeopleSoft was founded by Dave Duffield and Ken Morris.

JD Edwards and PeopleSoft have been taken over by Oracle and merged with Oracle ERP

SAP - Systems Applications & Products in Data Processing

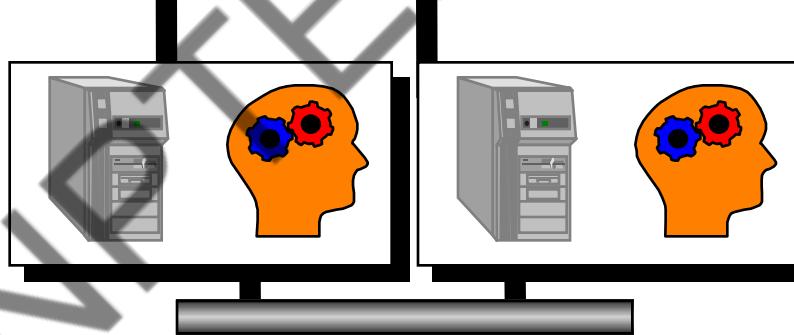


SAP R/3 : 3 Tier Architecture

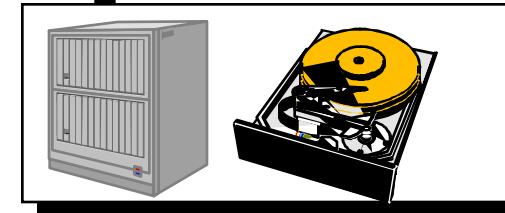
Presentation Layer (GUI) components are installed across many PCs.



The Application Layer components are installed across one or more high-end servers.



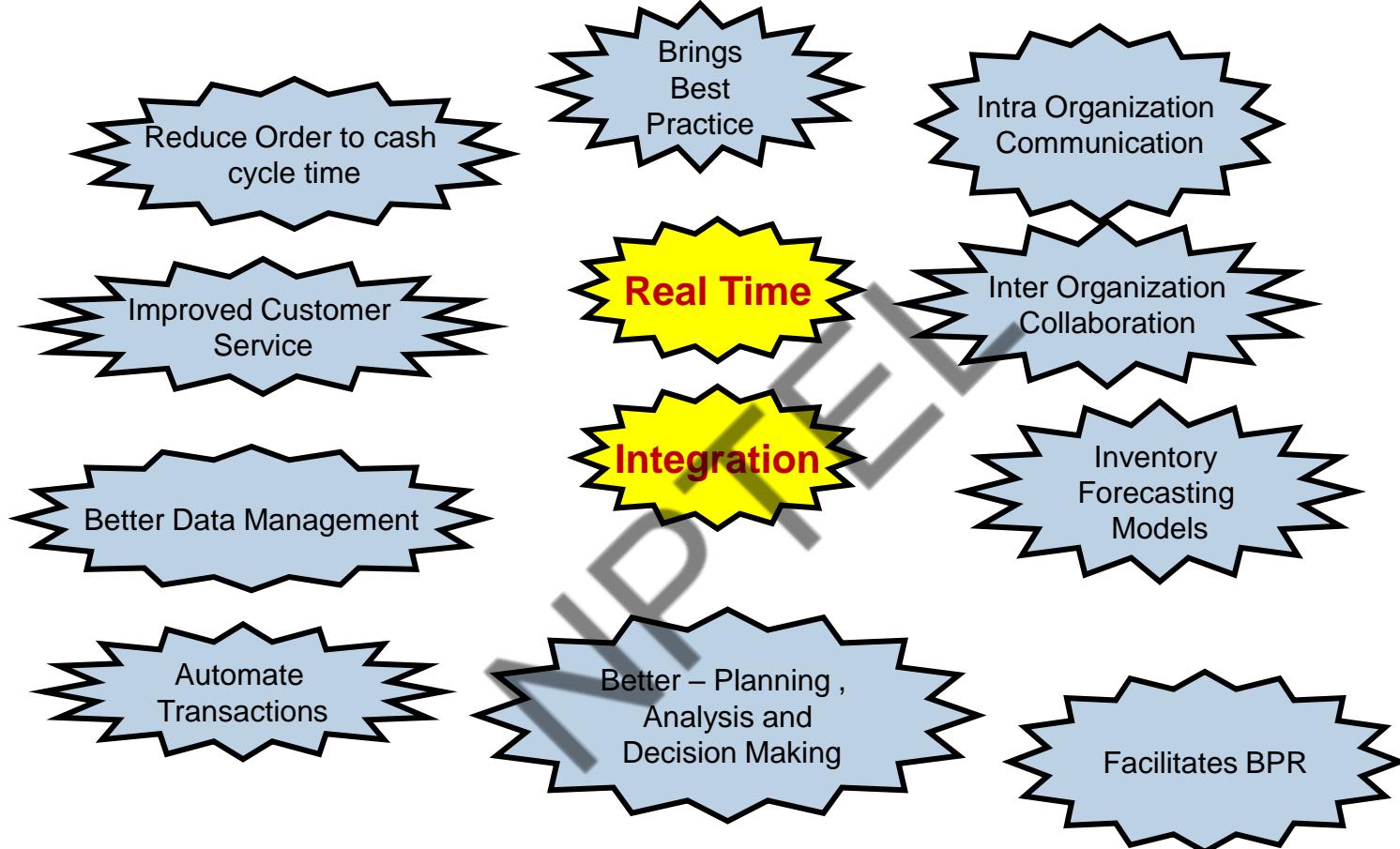
The Database Layer components are installed on high-end database server.



Business Process benefits clients expect from an ERP project

- Global process/ Product management
- Integrated Supply Chain Management
- Leverage purchasing and vendor management
- Order cycle time/ customer service improvement
- **Inventory reductions**
- Reduced information systems costs on an ongoing basis

ERP Benefits



Getting the best out of an ERP – Maximize ROI.....

Need to have a comprehensive or thorough business case for the executives and business stake holders

- **It is not merely an IT project**
- Provides with an excellent opportunity to transform business
- It entails significant organizational change
- Without support from business, the ERP implementation falters and IT often has a hard sell for keeping it going.

Getting the best out of an ERP – Maximize ROI....

- **Know your ERP and reduce your old applications**
 - The **standardized information and processes** of these solutions will streamline your operations so that they are more efficient.
 - The **industry best practices** will prepare you to handle external pressures, such as competition and compliance.
 - **Customization** will ensure that your particular needs are being met.
 - **Avoid too many customization** to make it cheaper with less bugs , better system performance (response time) and easier and less expensive to upgrade versions.

Getting the best out of an ERP – Maximize ROI.....

Cross the IT-Business divide

- *ERP Implementation is NOT an IT program but a Business Program*
- ERP applications form the **information backbone** of your business. Increasingly, business executives, the ones making decisions and trying to increase profits, are using these applications and need the information it can provide.
- Business professionals and not IT experts should be part of the process of defining functional requirements for the application.

Getting the best out of an ERP – Maximize ROI

- Conclusion

- ERP software can be an expensive and time-consuming IT investment
- ERP applications facilitate the standardization and acceleration of business processes and contribute to the visibility necessary to run your business well and grow revenue and profits.

REFERENCES

- Enterprise Resource Planning : Rajesh Ray
- Enterprise Resource Planning Systems : O'Leary



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Week 03: ERP

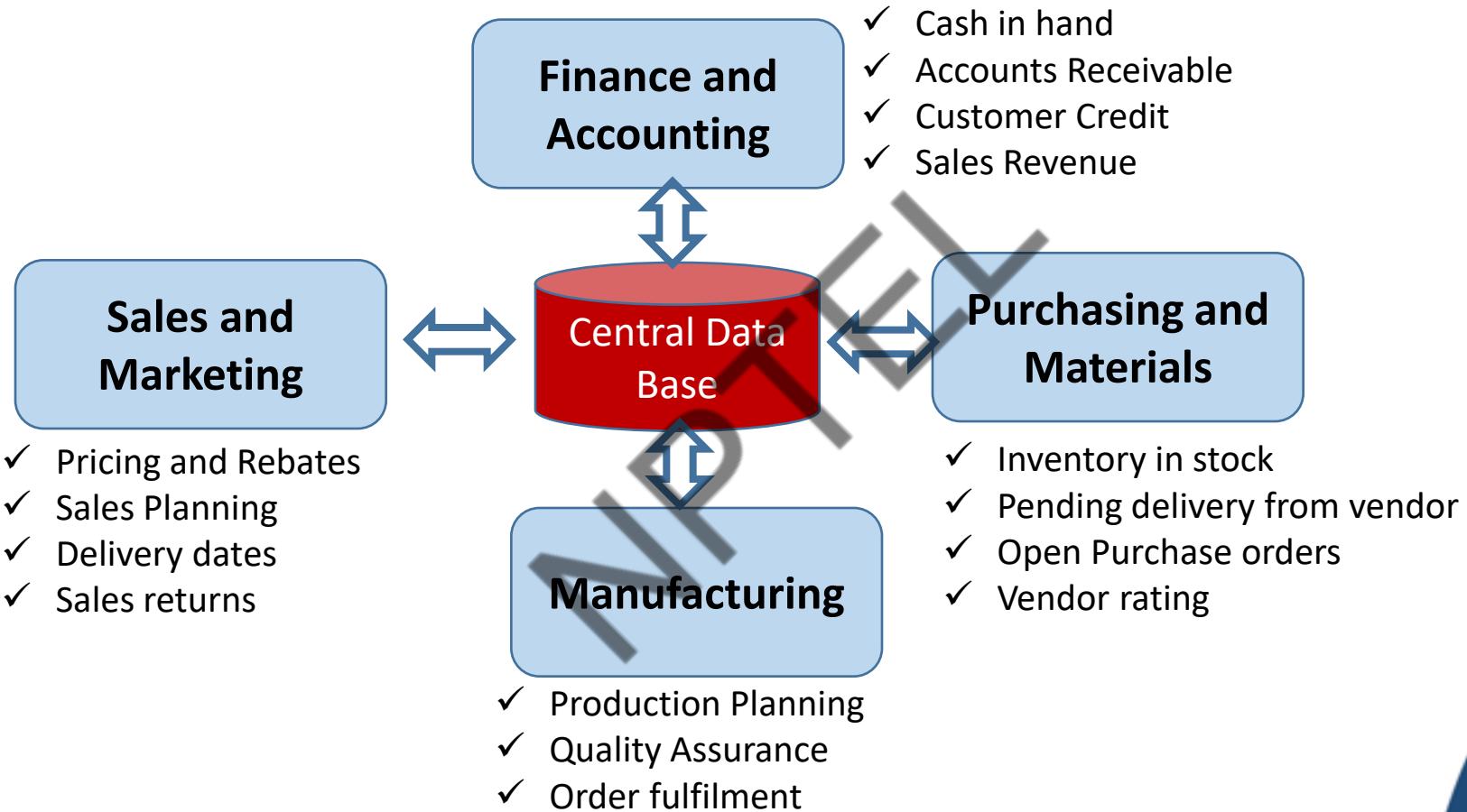
Lecture 03 : Advantages of ERP

Some of the impacts of ERP implementation

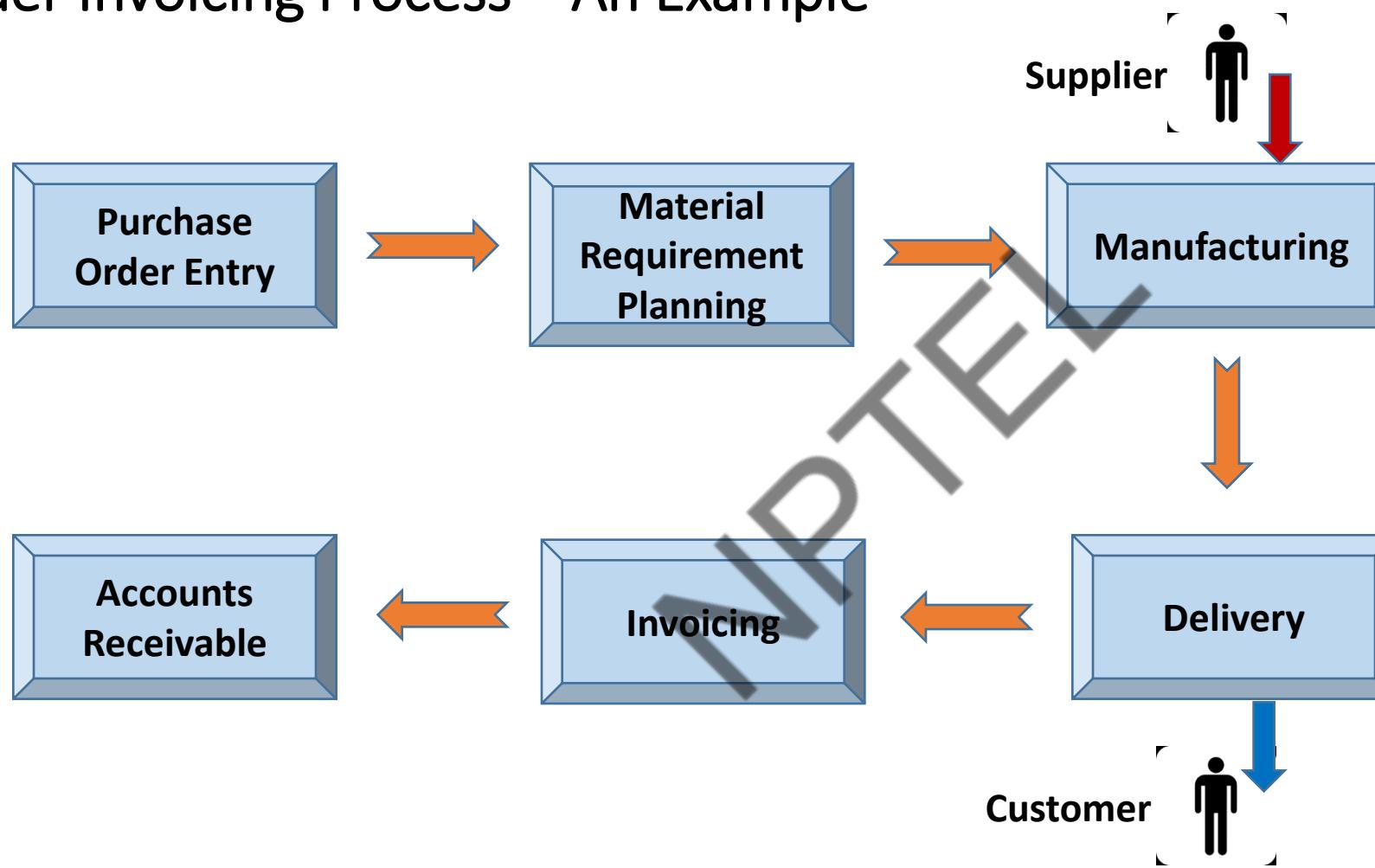
- **ERP will impact**

- Communication and information domain
- Leadership and authority
- Business Processes
- Best Practices
- Company policies
- Jobs and rewards
- Company structure and culture
- Skills and knowledge of employees

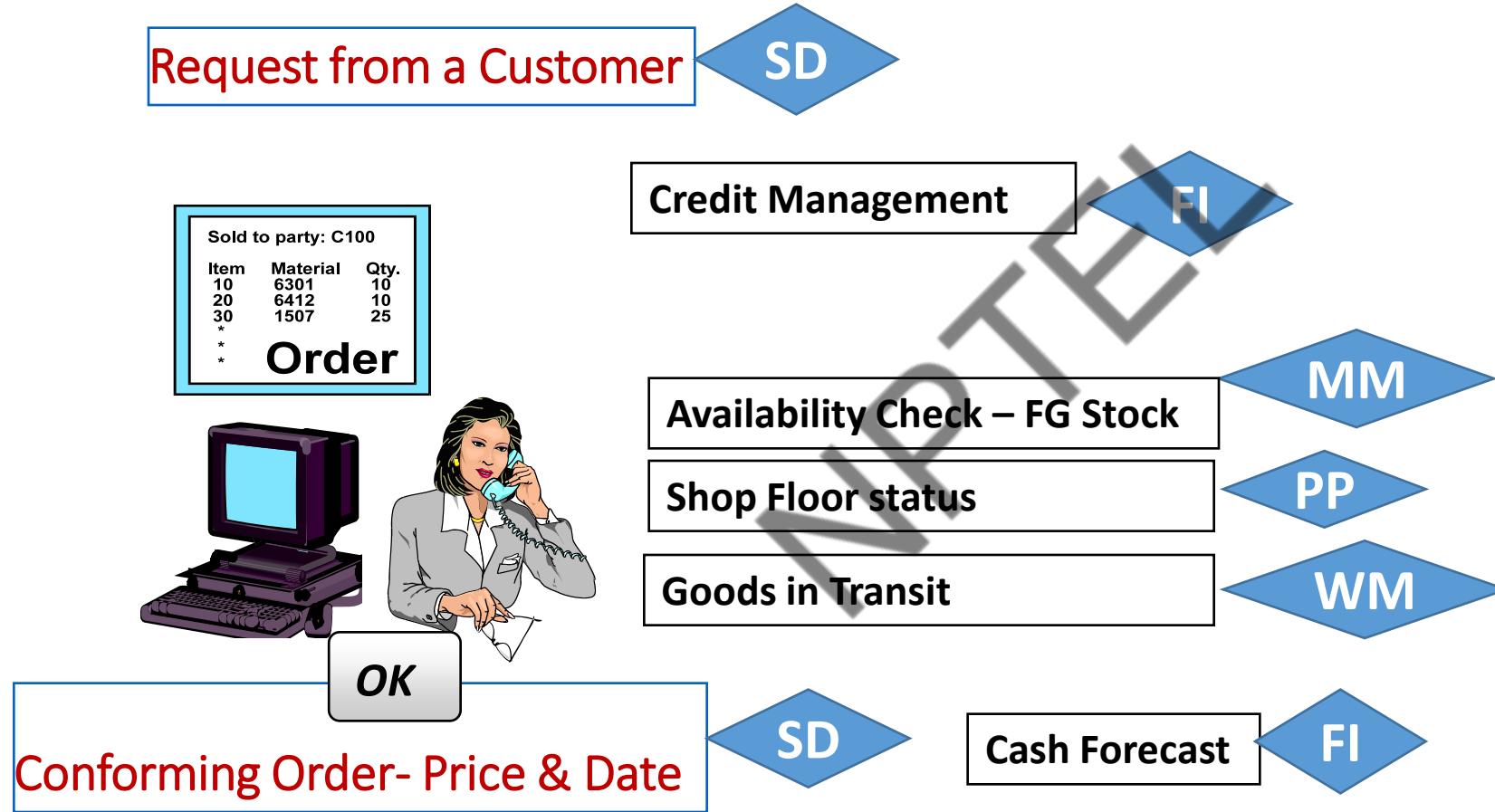
How the Organization uses ERP ?



Order Invoicing Process – An Example



Sales Order Enquiry Process Flow (Retail sales)



Impact of a Goods Receipt Transaction.....

A simple Goods Receipt transaction can trigger several activities , e.g.

- Stock and Value of inventory get updated
- Inspection Lot gets created to trigger a quality inspection
- Stock and Consumption account updated
- Purchase order history gets updated
- A transfer request is created to move the goods to the warehouse
- Vendor evaluation process gets initiated



Areas of performance improvement through ERP (1 of 4)

Revenue Generation

- ✓ Ability to Service new market segments.
- ✓ Increased asset utilization and capacity through better planning
- ✓ Redeploying workforce into higher value - added roles
- ✓ Broader Product Offering

Areas of performance improvement through ERP (2 of 4)

Cost Reduction

- ✓ Reduced working capital requirements
- ✓ Better Supplier Management
- ✓ Global centralized purchase using Strategic Sourcing with leveraged procurement spend.
- ✓ Shared Services in Purchase , HR and other general functions.

Areas of performance improvement through ERP (3 of 4)

Strategic Positioning

- ✓ Better information to run the business (Real Time and Decision Support Systems)
- ✓ Strong and flexible foundation to support future growth (seamless IT Platform)
- ✓ Improved supply chain integration (with Vendors and Customers' ERP systems)
- ✓ Standardized processes across divisions. This is very important for global / multi-national organizations (commonality of processes).
- ✓ Ability to more easily operate as a “single” business.
- ✓ Better employee productivity
- ✓ Better employee satisfaction through job-enrichment

Areas of performance improvement through ERP (4 of 4)

Improved Customer Satisfaction

- ✓ Reduced contract cycle times
- ✓ More accurate availability and delivery info
- ✓ Single face to the customer for sales, status and service
- ✓ Quicker response to contract and order changes
- ✓ ATP – Availability to Promise. Products can be booked for specific customers

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Lecture 04 : Risks and Challenges of ERP Projects

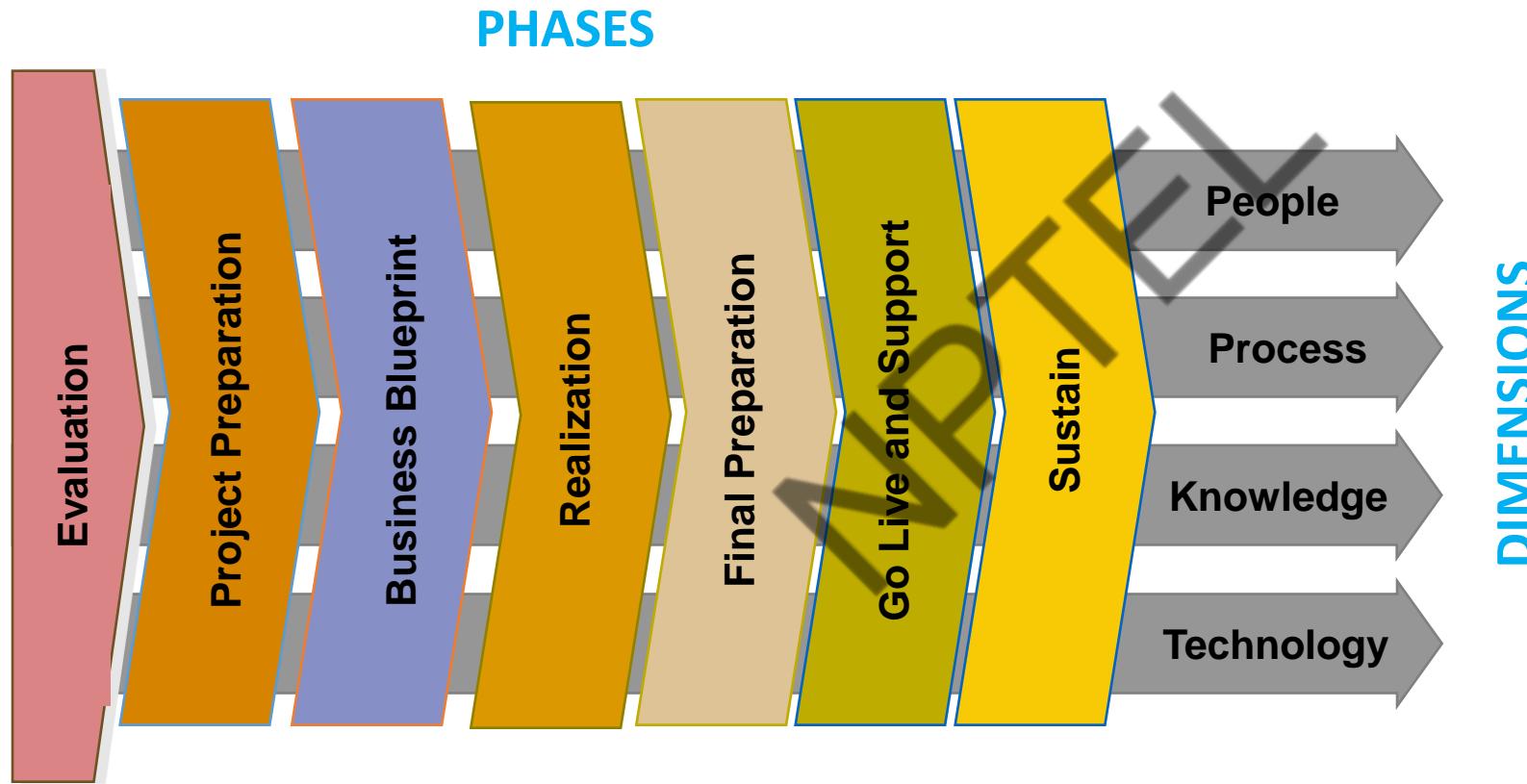
ERP Project Management - Challenges and Best Practices

Define and manage the scope of the ERP Project

1. Process Scope
2. Functionality Scope
3. Organizational Scope
4. Technical Enhancement Scope
5. Technical Infrastructure Scope
6. Interface Scope
7. Data Conversion Scope
8. Reports and Forms Scope

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ERP Implementation Method



Blueprint (Design) Phase – Best Practices

- ✓ It is critical to have overall end to end picture of your future state business processes. To-Be Scenario of the Organization.
- ✓ Business requirements should be as detailed as possible such that the business SMEs and ERP consultants can understand your exact business needs
- ✓ Only experts in ERP product knowledge should finalize the fit-gap analysis as Custom development is one of the major Cost and Time factor for the completion of the project.
- ✓ Custom development should be kept to the minimum to reduce cost and have high system performance.

Deployment & Go Live – Best Practices

- ✓ System Preparedness – Completeness of all System Integration Testing
- ✓ Completion of all End – User training
- ✓ System performance Testing (stress testing) to ensure better performance after go-live
- ✓ Checklist to verify internal and external constituent readiness :
 - Support Help desk in place
 - All IT equipment fully tested
 - Service Level Agreements in place
 - All stakeholders duly trained and made aware

Continuous Engagement with Stakeholders and Project Leaders (Do's and Don'ts)

- **Work closely with Implementer's senior executive (partner / delivery leader) to discuss avenues of improvements in project execution, faster project delivery, resource challenges, solution optimization and scoping issues.**
- **Review risks associated with project delivery, budget overrun, solution quality and Q-gates with vendor executives and propose mitigation plan.**
- **Oversee and advise the periodic (daily or weekly) project leadership meeting.** Ensure accurate project progress is reported and discussed. Advice on options to mitigate any known project risks or issues.

Continuous Engagement with Stakeholders and Project Leaders (Do's and Don'ts)

- **Manage disagreements or conflicts between business teams, internal leaderships and systems integrator.** Serve as an independent unbiased advisor to resolve these conflicts and keep the entire project team motivated throughout.
- **Evaluate and qualify project progress report for preparing periodic "steering committee presentation".** Provide expert opinion and advice to the Steering Committee when needed.
- **Ensure that all sign-off and deliverable approval procedures are followed throughout the project organization.**

ERP Challenges...(1of 3)

Project Implementation Challenges

- ✓ **Scope Changes**
- ✓ **Huge Budget**
- ✓ **Long Timeline**
- ✓ **Process redesign challenges**
- ✓ **Unrealistic expectation**
- ✓ **Complex Interfaces**

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ERP Challenges...(2 of 3)

Support / Maintenance Challenges

- ✓ Getting right people
- ✓ Managing multiple vendors
- ✓ Managing regular upgrades
- ✓ Technology obsolescence
- ✓ Large application portfolio
- ✓ Managing transition
- ✓ Realizing benefits

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ERP Challenges...(3 of 3)

Managing People

- ✓ **Managing Change**
- ✓ **Managing large project team**
- ✓ **Managing employee retention and relocation**
- ✓ **Top management support**

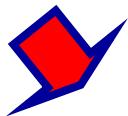
Reasons for ERP project risk

- Organizational Politics
- Multiple Projects
- Inexperienced Core Team
- Computer Literacy of Employees
- Aggressive Time Frame
- Connectivity in remote location
- Lack of Top Mgmt Support
- Frequent change in scope

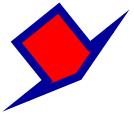


Five Step Project Risk Management Approach

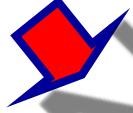
Find **potential risk elements** of the project



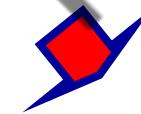
Analyze **Impact** of each of these elements



Assess the **Probability** of occurrence of these risk elements



Prioritize the risk



Develop a **Risk Mitigation Plan** for top risk elements

IMPLEMENTATION

Some Critical Success factors

- **Ownership & Support from top management
(Project Sponsor & Steering Committee)**
- **Commitment to the Product (e.g.SAP)**
- **COMMITMENT TO CHANGE**
- **Quick decision making and avoid lengthy discussions on trivial issues.**
- **Avoid frequent changes to requirements**
- **Strict adherence to the project plan**

ERP – Recent Trends

- ✓ ERP vendors are moving into Enterprise Applications space (CRM,SRM,PLM,SCM etc.)
- ✓ SME clients are everybody's focus
- ✓ ERP vendors are going vertical i.e. building more industry specific extensions
- ✓ New ERP deployment models are emerging in the form of SAAS, Cloud Computing etc.
- ✓ Newer types of ERP projects are emerging – Migration, Consolidation, Harmonization etc.

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- Enterprise Resource Planning Systems : O'Leary

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Lecture 05 : Class Discussion and Conclusion

Conclusion

- ERP software can be an expensive and time-consuming IT investment
 - Implementing an ERP software is full of risks from a project management perspective.
 - ERP applications facilitate the standardization and acceleration of business processes and contribute to the visibility necessary to run business well and grow revenue and profits.
 - ERP applications form the information backbone of a business.
- ERP Implementation is NOT an IT program but a Business Program**

Class Discussion -

1. When , Manufacturing happens , how do Purchase , Sales and Finance get impacted ?
2. CTO (Chief Technical Officer) > CIO (Chief Information Officer) > CDO (Chief Digital Officer) : What has made these transitions / change in title ?
3. When a running ERP system fails , how large would be the loss for the organization ?

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- Enterprise Resource Planning Systems : O'Leary

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