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SOFIA UNIVERSITY  
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# ICT-TEX course on Digital skills

## Topic 11: ICT in Enterprise Management

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Cooperation for innovation and the exchange of good practices [Knowledge Alliance](#)

**ICT IN TEXTILE AND CLOTHING HIGHER EDUCATION AND BUSINESS**

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# 11.1. Enterprise Resource Planning

These slides are part of the topic on  
*“Topic 11: ICT in Enterprise Management”* of the course on  
Digital skills in Textile and clothing industry.

Check also the other themes in this topic:

- 11.2. Business Intelligence Systems
- 11.3. Digital Marketing



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# Introduction to Enterprise Resource Planning

- Enterprise Resource Planning (ERP) is related to:
  - Enterprises - business with a defined set of goals
  - Business processes, their management, and data flow of the organizations
  - Enterprise Resources – management of any resources related to the organization's work and business activity
  - Enterprise Planning – the set of activities for an effective way of using and managing enterprise resources.



# Introduction to Enterprise Resource Planning

- Definition of ERP

ERP represents *“an integrated information system built on a centralized database and having a common computing platform that helps in effective usage of enterprise’s resources and facilitates the flow of information between all business functions of the enterprise (and with external stakeholders).”*

- Davenport T H & Harris J G. Competing on Analytics: The New Science of Winning. Harvard Business School Press Boston, USA 2007. pp.4 ISBN: 978-1-422-10332-6 (2007)



# Introduction to Enterprise Resource Planning

- ERP system represents a management software that integrates a business essential departments
- ERP systems store, monitor, and manage business data and facilitate the flow of information between business departments
- ERP systems contain all available data of the organization in one central database, storing business information and providing real-time unified access to data and business functions to the business departments and related stakeholders.



# Components of ERP

- ERP systems consist of a set of components (modules) with defined purposes and functions for the business.
- Main ERP components are:





# Benefits of ERP Systems

- Integrated information and security
- Reliable data, fast communication, and collaboration
- Increased efficiency and productivity
- Flexibility, Mobility, and Automation
- Increased Profitability and Reduced costs
- Better customer service
- Competitiveness

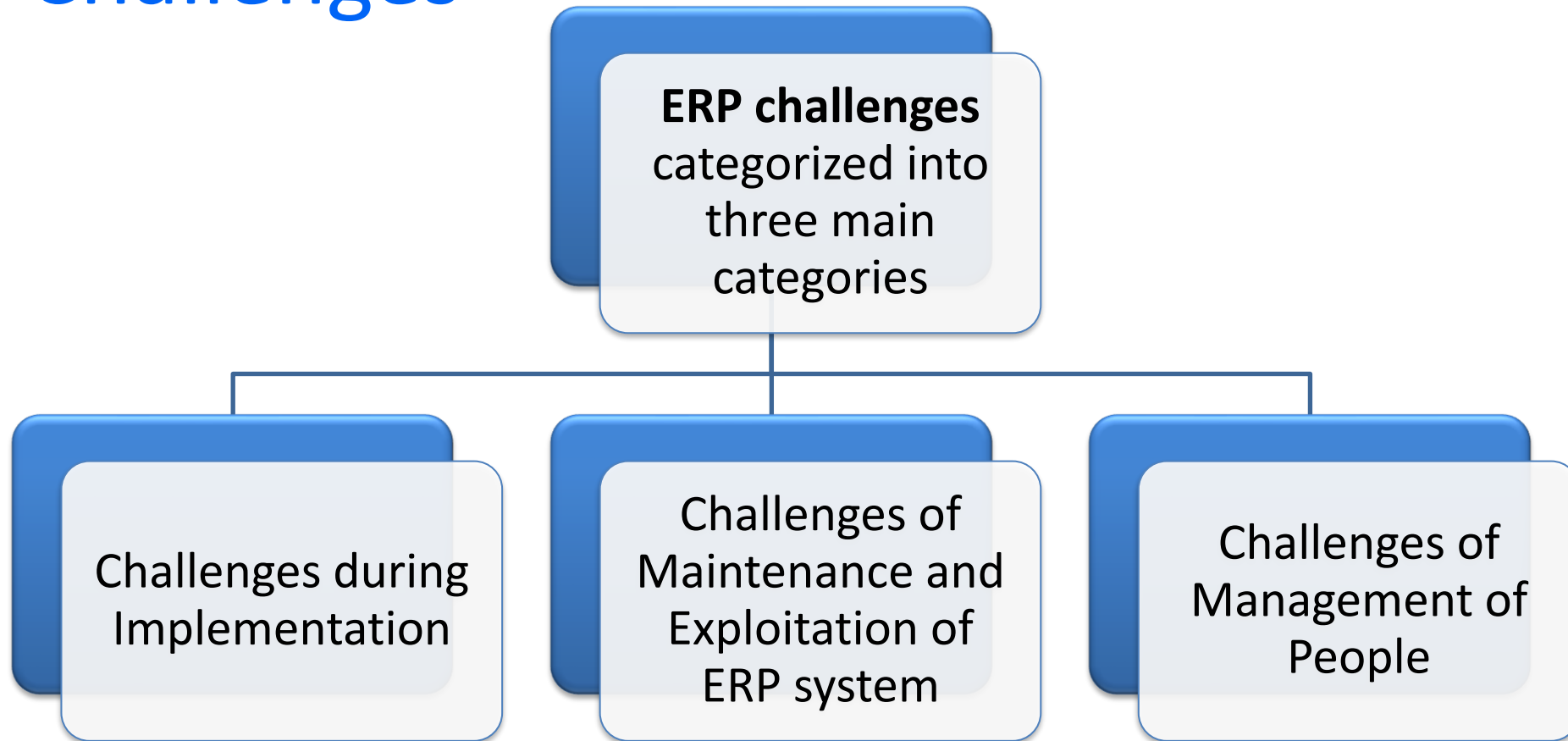


# ERP Challenges





# ERP Challenges





# ERP Challenges during implementation

The implementation challenges are related to:

- Scope of the project
- Budget limitations
- Implementations time
- Business process redesign
- Developing ERP interfaces
- And many others



# ERP Challenges of maintenance and exploitation of ERP system

The maintenance and exploitation of ERP system challenges are related to:

- Management of ERP system providers and technology development
- Management of maintenance and development ERP components, ERP system
- Management of characteristics of the ERP systems, its modifiability, flexibility, portability, and so on.
- Realizing business goals and benefits and many others.



# ERP Challenges of management of people

The challenges of management of people are related to:

- Management of changes within the organization
- Management and development of project teams and employee skills
- Top managers support
- And many others related to the managing of people



# ERP Market Trends

- The development of new technologies, market and business models, deployment methods, and so on impacts the growth of the ERP market such as:
  - Digital Transformation
  - Cloud-based ERP systems
  - User-friendly ERP systems
  - Integrating the Internet of Things (IoT) with ERP systems
  - And many others



# Enterprise Applications and ERP

- Enterprise Application represents a software system for an organization, providing business logic and software capabilities to manage an organization's business processes and functions. The goal is to provide improvement in business productivity, performance, and efficiency.
- Enterprise applications are constantly evolving and their application in various business areas is constantly increasing





# Enterprise Applications and ERP

## Examples of Enterprise Applications are:

- Enterprise Resource Planning (ERP)
- Customer Relationships Management (CRM)
- Human Resource Management (HRM)
- Supplier relationship management (SRM)
- Supply Chain Management (SCM)
- Product lifecycle management (PLM)
- Business Intelligence (BI) and others



# ERP Systems Development Process

- The ERP development process includes various phases and related activities
- The ERP system design process requires direct relation to the business and business requirements
- The process requires multiple business evaluations and risk assessments
- The development and maintenance of an ERP system must be economically justified for the company.

# ERP Systems Development Process

- The common ERP development process includes several phases with related activities:
  - Planning and Assessment
  - Requirements Analysis
  - Design
  - Implementation
  - Testing and Deployment
  - Maintenance and support



# ERP Systems Development Process

The activities related to the common ERP system development phases.

- Planning and Assessment Phase
  - One of the most important phases for starting the process of developing an ERP system. This phase requires many activities concerning business assessments and evaluations - business needs assessments, resource assessments, business costs, future value and project assessments, and so on.

# ERP Systems Development Process

The activities related to the common ERP system development phases.

- Requirements Analysis Phase
  - At this phase, many analyzes are made about the business needs, requirements and business practices, and solutions that must be supported by the future ERP system.
  - Analysis of the future value gain for the business
  - The ERP system should be selected based on the analyses made, and project teams must be assigned.



# ERP Systems Development Process

The activities related to the common ERP system development phases.

- Design Phase
  - The selected ERP system supports defined best practices for business
  - It includes activities for re-engineering the current business processes for inclusion into the ERP system capability
  - Customize the ERP system to the organization business processes



# ERP Systems Development Process

The activities related to the common ERP system development phases.

- Implementation Phase
  - Preparing the ERP system for delivery
  - Customizations and developing interfaces, reporting systems, control, security, and so on
  - Importing data to the new system
  - Beginning of training of the employees on the developing system



# ERP Systems Development Process

The activities related to the common ERP system development phases.

- Testing and Deployment Phase
  - All activities regarding the testing of the designed and developed ERP system must take place in this phase.
  - All system functionalities are tested to meet the defined requirements
  - If the testing is successful the ERP system will be deployed



# ERP Systems Development Process

The activities related to the common ERP system development phases.

- Testing and Deployment Phase
  - In the deployment phase, final assessment of the ERP system is made to validate it
  - If the validations are successful, the final business data is uploaded to the ERP system
  - The system is ready to use

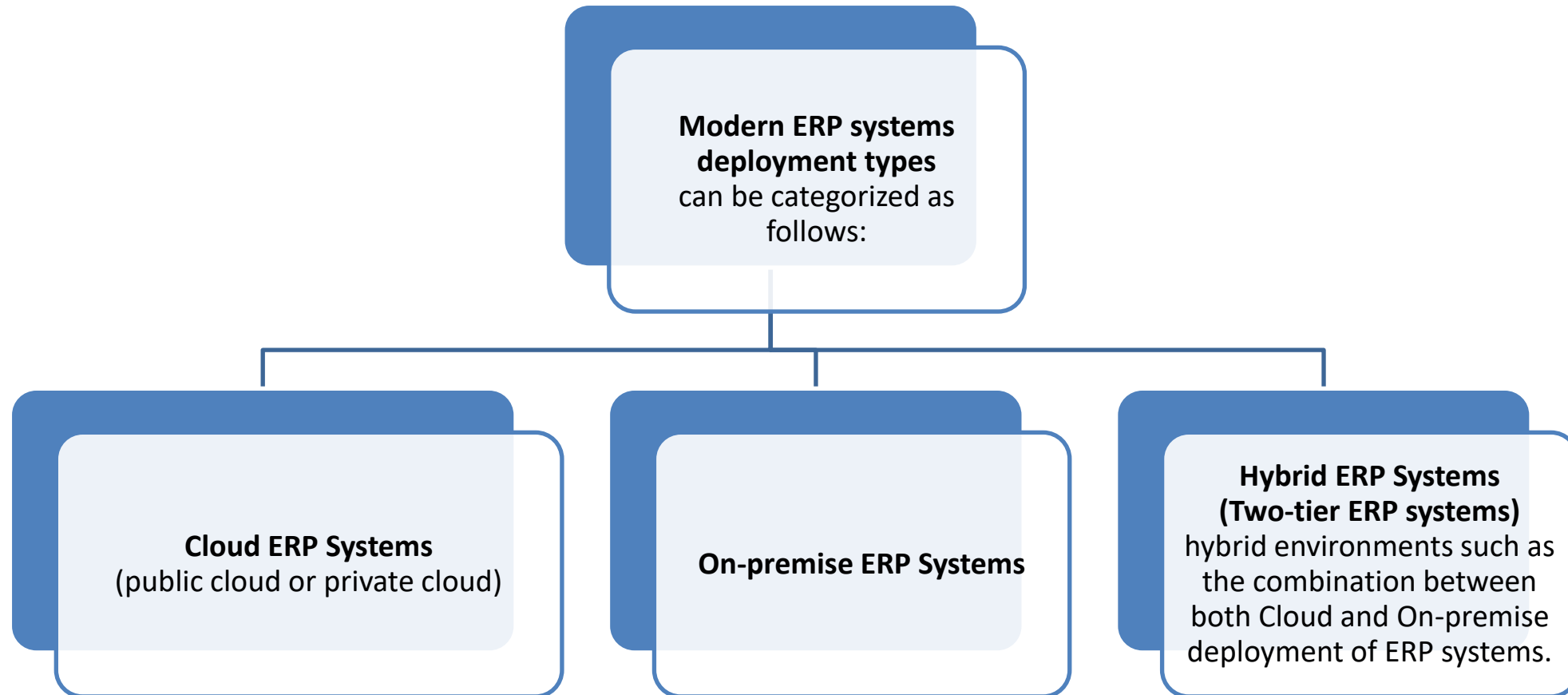
# ERP Systems Development Process

The activities related to the common ERP system development phases.

- Maintenance and support Phase
  - This phase provides technical support for the implemented ERP system
  - Provides customizations of the existing ERP system
  - Provides capabilities for upgrades and evolvement of the ERP system



# ERP Deployment Types





# ERP Deployment Types – Cloud ERP Systems

Cloud ERP systems operate on the platform of the ERP system providers

Can also provide an option for use of private cloud or public cloud

Cloud ERP provides increased value for the business

Lower costs for ERP development, integration, and operation

Scalability – quick and easy, not requiring a lot of labor and time



# ERP Deployment Types – Cloud ERP Systems

Fast and quick implementation of Cloud ERP systems

Cloud ERP Systems benefit from the Cloud technology advancements and capabilities

Security of business data – a high priority for cloud suppliers

Cloud ERP Systems provide flexibility and mobility for the business – the system can be accessed from anywhere from the world and any mobile device



# ERP Deployment Types – On-premise ERP Systems

On-premise ERP systems are installed, configured, and operating on the local machines (computers, servers, and so on) of the companies.

Management of the ERP system by the organization

Higher costs vs Cloud ERP – often the payment is made as a one-time fee (Cloud ERP can be with a monthly or annual subscription)

Large business investment upfront



# ERP Deployment Types – On-premise ERP Systems

All control of the ERP system within the organization

Easy to implement modifications for specific business purposes and requirements

The security of business data is the responsibility of the organization

Require more time for implementing vs implementation of Cloud ERP systems



# ERP Deployment Types – Hybrid ERP Systems

Common named as Two-tier ERP systems

ERP applications and data are allocated in different places such as Cloud and on-premise.

Hybrid ERP Systems combines Cloud ERP systems and On-premise ERP systems

Suited for large businesses and companies – for example, one Cloud ERP system for the company's headquarter and multiple On-premise ERP systems for regional offices of that company





# Integration of ERP Systems

- The integration of an ERP System into the organization business processes requires multiple business decisions regarding the existing systems that are being used by the company
- The organization must decide which systems to keep and which of them to be replaced with ERP modules.
- ERP integration provides increased Value for the company



# Cost of ERP Systems

- The cost of implementing an ERP system includes various solutions regarding the ERP modules and functions used.
- ERP system price is variable based on the type of deployment of an ERP, number of users, level of customizations, functions provided, and so on
- The implementation costs can be grouped into two categories
  - Direct Costs
  - Indirect Costs



# Cost of ERP Systems – Direct Costs

Direct costs of implementing an ERP system can include:

- Hardware costs
- Operating systems costs
- Software and database licenses fees
- ERP Application license fee and ERP implementation costs
- Additional applications costs
- Service costs and support costs (Maintenance)
- Training staff and other costs



# Cost of ERP Systems – Indirect Costs

Indirect costs of implementing an ERP system can include:

- Cost of employees involved in the project and staff turnover costs
- Transportations costs
- Consultations costs
- Time spend on implementation and maintenance
- Operation disruption
- And other costs



# Cost of ERP Systems Cloud ERP vs On-premise ERP

- Cloud ERP systems are considered cheaper than On-premise ERP systems, regarding the fast and quick integration of an ERP system on the cloud that is ready to use and contributing value to the business
- This is because Cloud ERP systems have lower upfront costs due to cloud software often includes monthly or annual subscription payments.
- Cloud ERP systems require lower maintenance costs – no requirement of possession of hardware and software



# Cost of ERP Systems

## Cloud ERP vs On-premise ERP

- On-premise ERP systems involve huge one-time investment for the implementation of that ERP system
- On-premise ERP systems require higher maintenance costs than Cloud ERP systems because the hardware and software are property of the organization
- Depends on the scale of the organization and the scale of the on-premise ERP system



# Popular ERP Companies

- Examples of popular ERP Vendor Companies:
  - SAP
  - Oracle
  - Microsoft
  - Salesforce
  - FIS Global
  - DELMIAworks (formerly IQMS)
  - IFS Applications
  - SYSPRO
  - Epicor ERP
  - Intuit Inc.
  - Fiserv
  - Inform ERP
  - Acumatica
  - And many others



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