

# *MIS*

## *(Management Information System)*

*Sharif University of Technology*

*Session # 4*



### *Session schedule*

- *Contents*
  - *Systems Analysis and Design*



## Information system development

- *Information system development Methodologies*
  - *Several models exist to streamline the development process.*
  - *Sometimes a combination of the models may be more suitable*
    - *Waterfall model*
    - *Unified software development Process model*
    - *Spiral model*
    - *Agile development*
    - *Rapid application development*



## Information system development

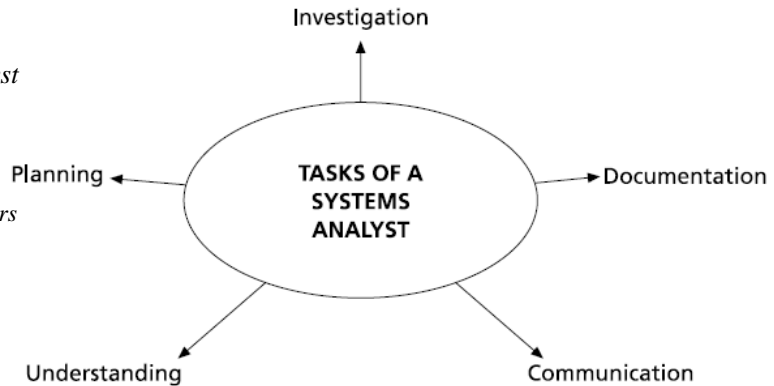
- *System Analysis*
  - *Separation of a substance into parts for study and interpretation; detailed examination.*
  - *In the case of systems analysis,*
    - *the 'substance' is the business system under investigation, and*
    - *the parts are the various subsystems that work together to support the business.*
  - *The investigation or study conducted during the analysis phase may build on the results of an initial feasibility study*
  - *It will result in the production of a document that specifies the requirements for a new system. "requirements specification" / "functional specification"*
  - *It is described as a target document (establishing goals for the rest of the project and telling what the project will have to deliver in order to be considered a success.)*

## Information system development

### System Analysis

#### Five areas of a system analyst tasks:

- Investigation
- Communication with customers
- Documentation
- Understanding
- Preparation & planning



## Information system development

### System Analysis

#### Five areas of a system analyst tasks:

##### Investigation

*This group of tasks consists of all the fact-finding activities that an analyst may have to undertake. At the heart of these activities is the key skill of asking questions, orally or on paper, which will yield the required information.*

##### Communication with customers

*Many analysts regard this as the single most important factor in ensuring a successful outcome to the analysis and producing an accurate specification of the client's requirements.*

*This communication can be formal – presentations, meetings, ... or informal, but it does need to be regular and as open as possible.*

## Information system development

### System Analysis

#### Five areas of a system analyst tasks:

##### Documentation

The writing of meeting minutes and interview records, the drawing of data models, the compiling of lists or catalogues of requirements and the reviewing of documents produced by others would all be included in this group.

##### Understanding

At the heart of the analyst's job is the desire to understand the information collected, so that they can pass on this understanding to others on the project.

##### Preparation & planning

This group of tasks will include the planning of analysis activities, estimating how long these activities will take, and scheduling them to fit in with the project plan.

## Information system development

### System Analysis

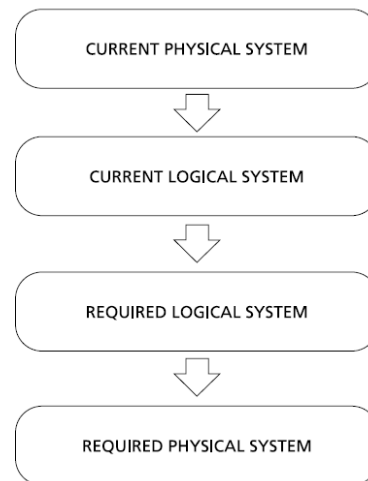
#### System analysis process:

##### The structured approach

Analysis can be considered to be a four-stage process

##### The PARIS Model

Analysis can be considered to be a Five-stage process



## Information system development

### ▪ System Analysis

#### ▪ System analysis process:

##### ▪ The structured approach

*Analysis can be considered to be a four-stage process*

##### ▪ This approach is associated with it three general principles:

##### ▪ Modeling

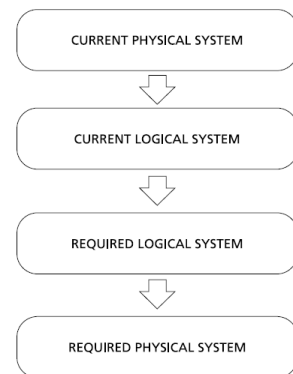
*refers to the use of graphic models, which are employed wherever possible, in place of narrative text, to provide clear and unambiguous information about the system.*

##### ▪ Partitioning

*breaking the system down into a number of smaller parts so that it can be more easily understood, and so that work can be allocated to the members of the project team.*

##### ▪ Iteration

*Structured systems analysis provides opportunities for revisiting and amending the models of the system*



## Information system development

### ▪ System Analysis

#### ▪ System analysis process:

##### ▪ The PARIS Model

*Analysis can be considered to be a Five-stage process*

##### ▪ Planning the approach

##### ▪ Asking questions and collecting data

##### ▪ Recording the information

##### ▪ Interpreting the information collected

##### ▪ Specifying the requirement

## Information system development

### ▪ System Analysis

#### ▪ System analysis process:

##### ▪ The PARIS Model

##### ▪ Planning the approach

*During planning, objectives are set, constraints identified, terms of reference agreed, and preparations made for fact finding*

##### ▪ Asking questions and collecting data

*This includes all the fact-finding activities carried out as part of the analysis*

## Information system development

### ▪ System Analysis

#### ▪ System analysis process:

##### ▪ The PARIS Model

##### ▪ Recording the information

*The previous information must then be recorded in a clear and unambiguous way.*

##### ▪ Interpreting the information collected

*Having documented the current physical system, we need to understand the underlying logical system, and then consider how the client's requirements can be built in.*

##### ▪ Specifying the requirement

*The final stage in the model, specifying the requirement.*

*The analyst, during this stage, will usually be involved in writing a report, and in preparing and delivering a presentation.*

## *Information system development*

- *System Analysis (Planning the approach)*
  - *There are a number of starting points for the systems analyst.*
    - *Feasibility studies*
    - *Technical design studies*
    - *A high-level analysis*
    - *...*
  - *The first step taken by the systems analyst should be*
    - *To plan the approach carefully,*
    - *bearing in mind the old adage that 'failure to prepare is to prepare to fail!'*

## *Information system development*

- *System Analysis (Planning the approach)*
  - *To start the planning following three points is essential:*
    - *What type of information is required?*
    - *What are the constraints on the investigation?*
    - *What are the potential problems that may make the task more difficult?*

## *Information system development*

- *System Analysis (Planning the approach)*
  - *To start the planning thinking to the following items is essential:*
    - *Critical information you require before the investigation starts;*
    - *How you will get this information;*
    - *The fact-finding techniques that will be appropriate;*
    - *The danger areas for the project and for your company.*

## *Information system development*

- *System Analysis (Planning the approach)*
  - *As part of the planning process, analysts must ensure that:*
    - *They understand the objectives and terms of reference agreed with the client;*
    - *They are aware of constraints that affect the analysis process;*
    - *They plan the research, initial contact and other tasks to be completed during*
    - *The investigation and manage time appropriately.*



## *Information system development*

- *System Analysis (Planning the approach)*
  - *Understanding the objectives and terms of reference*
    - *A project will usually originate to meet the needs of one or more parts of an organization.*
    - *Senior management may need earlier and more accurate information to improve their control over the business and enable strategic planning to be carried out.*
    - *Line managers may need a new system, or enhancements to an existing system, to better support the activities of the company.*
    - *The IT department may have identified a more cost-effective or efficient solution to a problem as a result of new technologies or methods becoming available.*

## *Information system development*

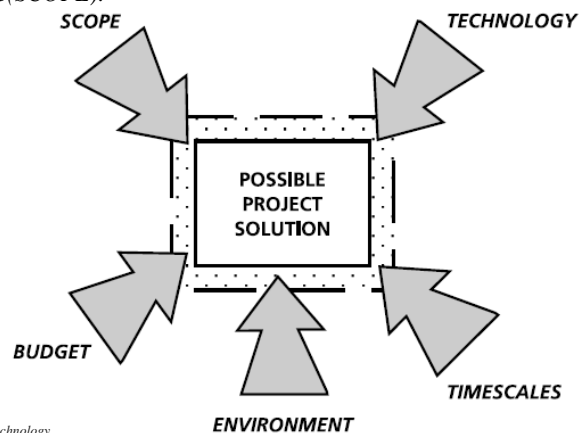
- *System Analysis (Planning the approach)*
  - *Understanding the objectives and terms of reference*
    - *Measurable benefits resulting from investment in the project:*
      - *Increased profitability;*
      - *Improved cash flow;*
      - *More effective utilization of resources, including people*
      - *Improved customer service (resulting in higher levels of customer satisfaction);*
      - *Faster access to management information;*
      - *Better management control.*

## Information system development

- *System Analysis (Planning the approach)*
  - *Understanding the objectives and terms of reference*
    - *The main areas included in the terms of reference(SCOPE):*
      - *System boundary.*
      - *Constraints.*
      - *Objectives.*
      - *Permission.*
      - *End products.*

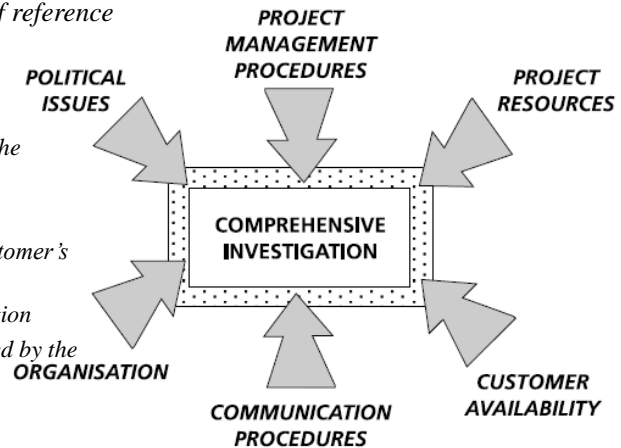
## Information system development

- *System Analysis (Planning the approach)*
  - *Understanding the objectives and terms of reference*
    - *The main areas included in the terms of reference(SCOPE):*
      - *Constraints (customer):*
        - *Technology*
        - *Environment*
        - *Timescales*
        - *Budget*
        - *Scope*



## Information system development

- **System Analysis (Planning the approach)**
  - **Understanding the objectives and terms of reference**
    - The main areas included in the terms of reference(SCOPE):
      - Constraints (analyst investigation):
        - The project resources available during the analysis
        - The availability of customer contacts
        - The political issues important in the customer's organization
        - The complexity and size of the organization
        - The project management procedures used by the project team
        - Communication procedures



## Information system development

- **System Analysis (Planning the approach)**
  - **Feasibility study**
    - Feasibility study is really a small-scale systems analysis
    - The study involves analysts in most of the tasks of a full systems analysis but with a narrower focus and more limited time
    - A feasibility study is no substitute for a full, detailed and thorough analysis of the client's system
    - Detailed investigation of operational and procedural activities during a feasibility study is very limited.

## *Information system development*

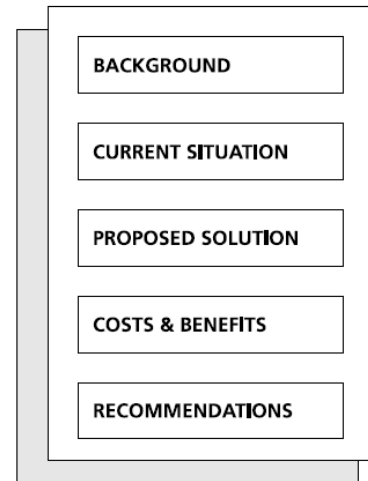
- *System Analysis (Planning the approach)*
  - *Feasibility study*
    - *Analysts should concentrate on providing the answers to four key questions:*
      - *How much? The cost of the new system.*
      - *What? The objectives of the new system.*
      - *When? The delivery timescale.*
      - *How? The means and procedures used to produce the new system.*

## *Information system development*

- *System Analysis (Planning the approach)*
  - *Feasibility study*
    - *The feasibility study report has to address three levels of feasibility:*
      - *Technical feasibility. Is it going to work?*
      - *Business feasibility. Are cost and timescales right for the business, and will potential returns justify the initial outlay?*
      - *Functional feasibility. Will the solution satisfy the end users*

## Information system development

- *System Analysis (Planning the approach)*
  - *Feasibility study*
    - *The contents of a feasibility report could be as follows:*
      - *Background*
        - *Terms of reference.*
        - *Reasons for the study.*
    - *The current situation*
      - *Overview of current situation.*
      - *Problems and requirements identified.*



## Information system development

- *System Analysis (Planning the approach)*
  - *Feasibility study*
    - *The contents of a feasibility report could be as follows:*
      - *Proposed solution*
        - *Technical implications*
        - *Operational implications*
        - *Cost implications*
      - *Cost–benefits analysis*
      - *Recommendations*

