INF700

IT for Business and Management

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Plan

Session 1

✓ Lecture 1 – BIS Analyses
✓ Lecture 2 – BIS Design

CASE STUDY & GROUP TASK

✓ READ Case Study 1 – Case Study 2A [Tallinn City Council]
Group Task 1 – Tallinn City Council
Coffee break 1 (5 mins)
✓ Group Task 2 – Case Study 2B [Feasibility Assessment Report]

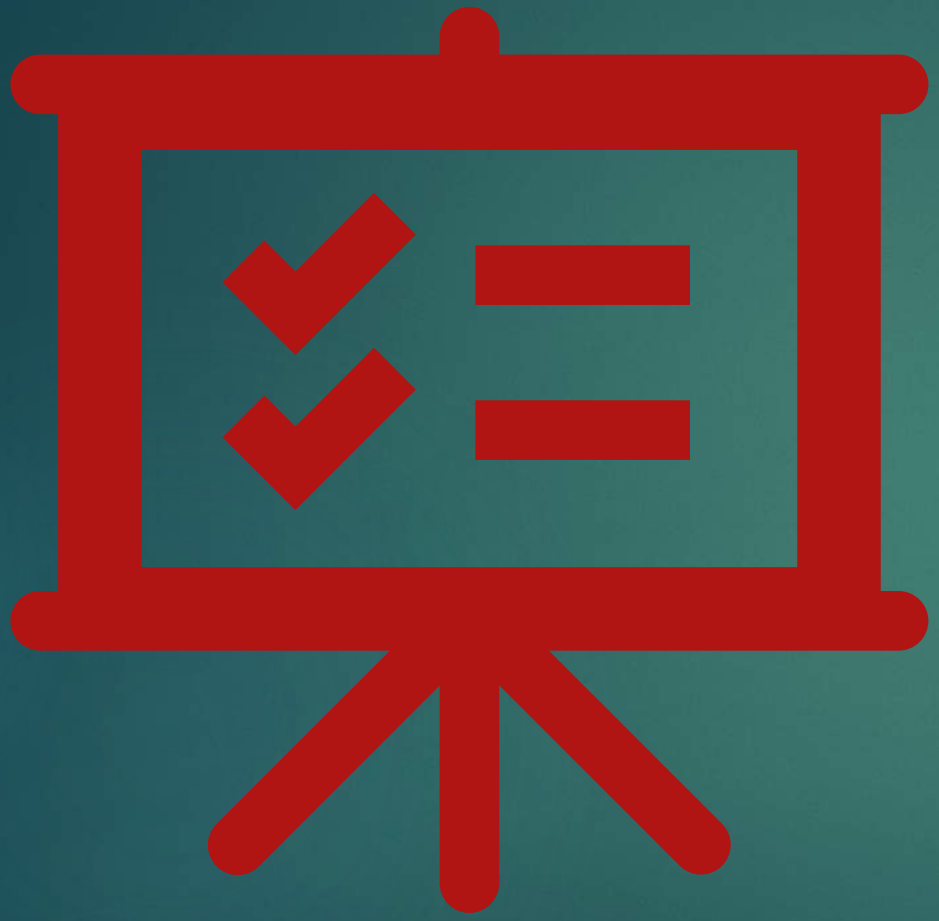
Session 2

✓ READ Case Study 3 – [Energia OU and Legacy Systems]
Coffee break 2 (5 mins)
✓ Lecture – SAP and Legacy Systems

Lunch Break (50 mins)

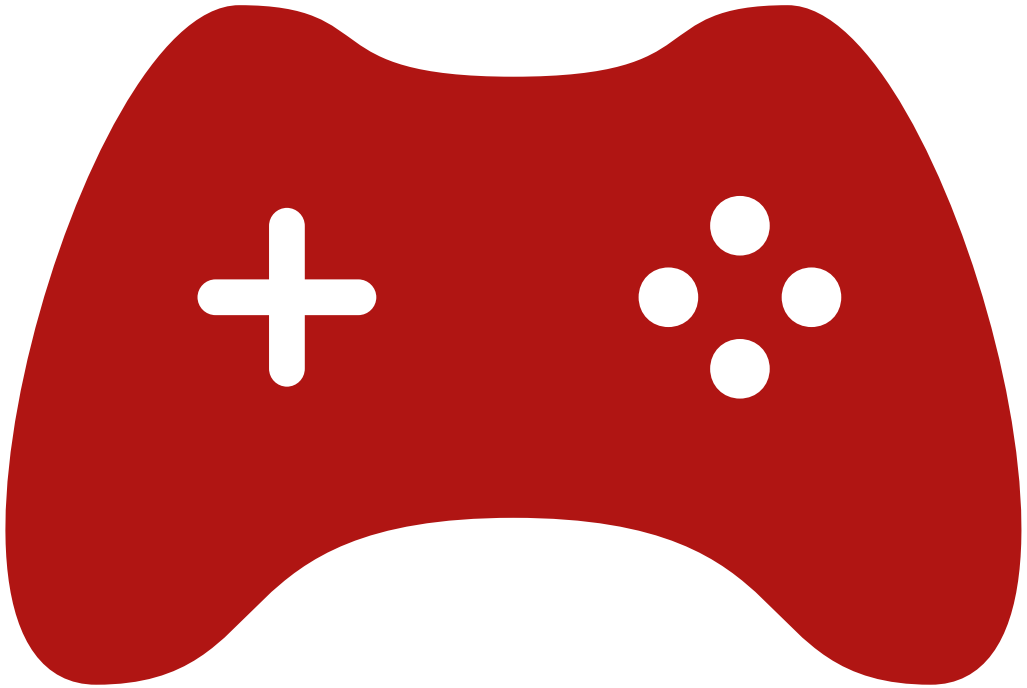
Session 3

Lecture 3 - IS Security



Session 3 - 18.04.2019

BIS Analysis



Quiz Game 1

Information Systems

What is BIS Analysis?

What is a **Business Information System (BIS) Analysis?**

- **An investigation** of the **business and user requirements** of an information system.
- **Fact-finding techniques** are used to ascertain the user's needs and these are summarised using a **requirements specification** and a range of **diagramming methods.**

Systems Analysis

Two basic components of systems analysis

- **Fact-finding**
- **Documentation**

BIS is necessary to determine the system requirement before design or development.

Systems analysis is about finding out **what the new system is to do, rather than how**.

1. **Fact-finding**: all prospective users of the system should contribute to determining requirements.

2. **Documentation**: detailed systems design follows the design stage and it is important that it is based on clear documentation and diagrams.

Systems Analysis

Identifying the requirements (How to?)

1. **Interviewing**: a range of staff and/or customers using a structured technique to identify features and problems of the current systems and required features of future systems.
2. **Recording**: Making notes or records of business processes, data acquisition and processing, information flows etc.
3. **Questionnaires**: used to obtain a range of opinions on requirements by targeting staff and customers. Can be open/closed questions.
4. **Documentation Review**: Targets information about existing systems, such as user guides, requirement specifications, etc.
5. **Observation**: Useful for identifying inefficiencies in an existing way of working. Can be manual or computer-based.
6. **Brainstorming**: Uses interaction within a group of staff to generate new ideas and discuss existing problems.

User Requirement Specification

Output requirements: includes things such as enquiry screens, regular standard and ad hoc reports and interfaces to other systems.

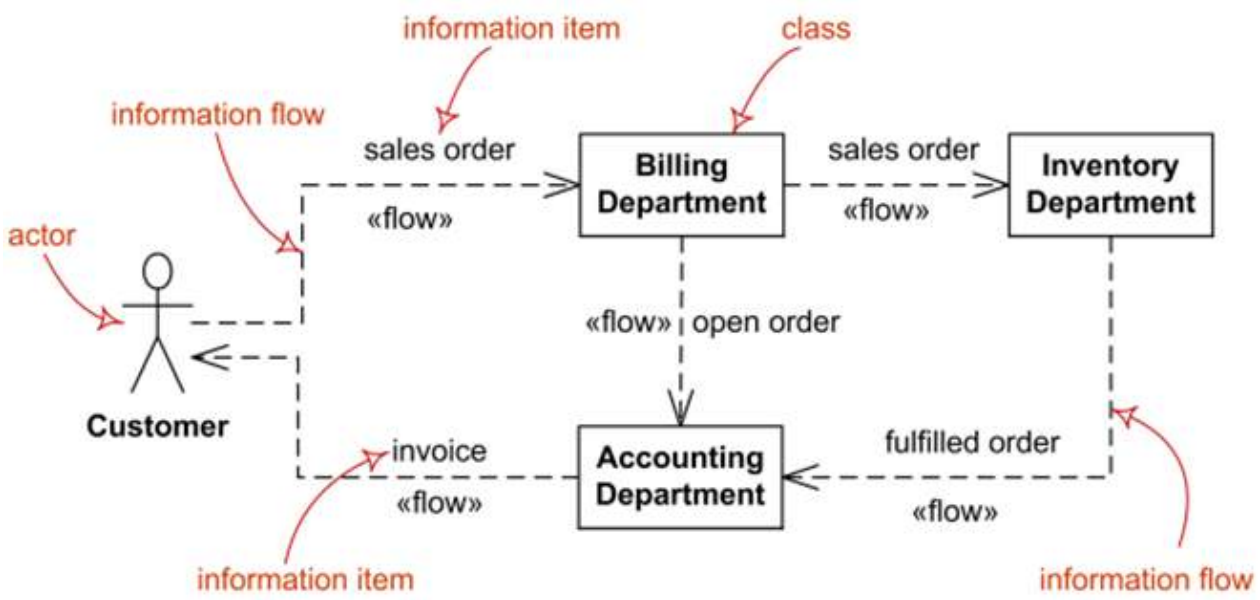
One approach to documenting requirements is using the:

Requirements catalogue

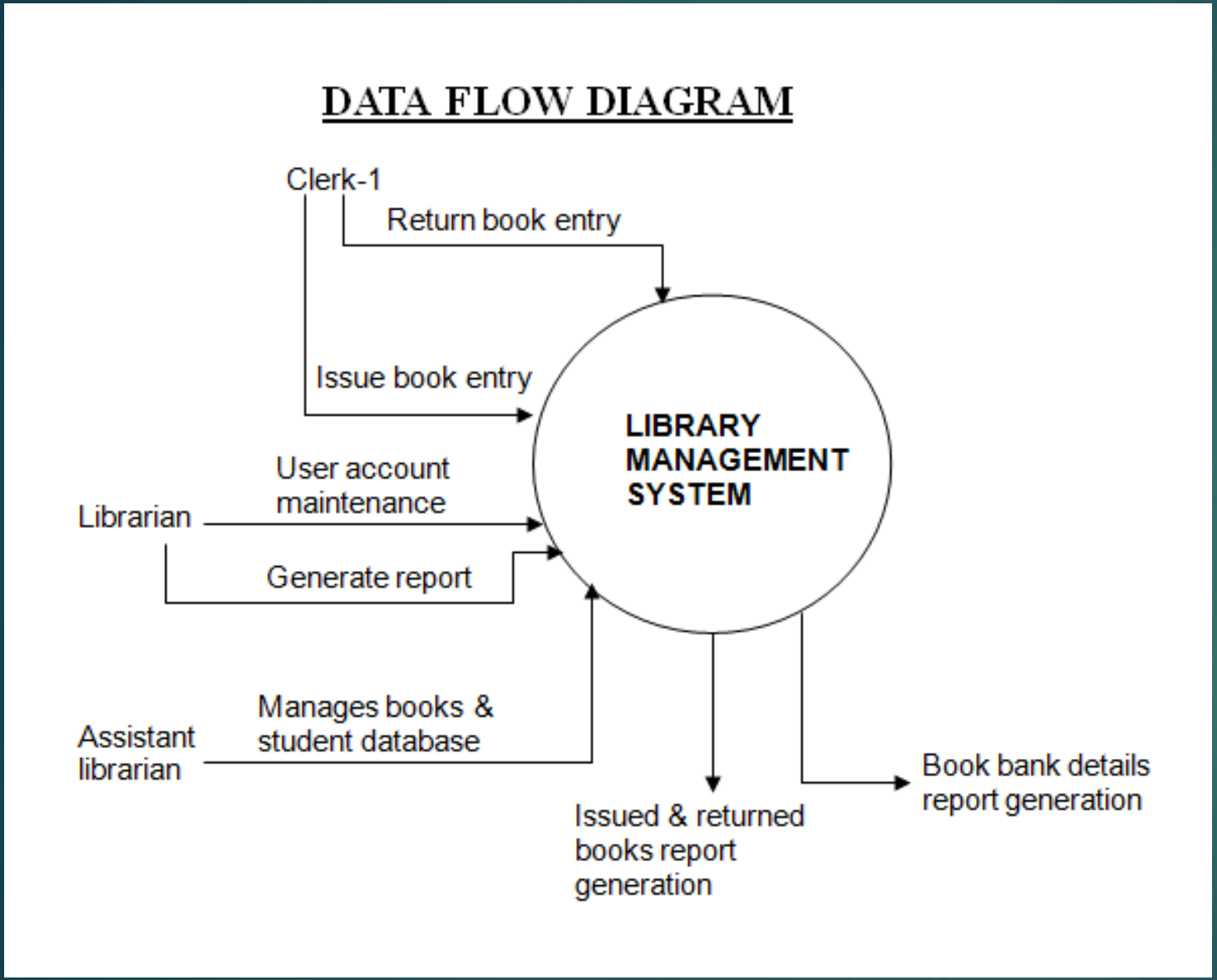
Example of requirement catalogue

Functionality	
Suitability	-
Accuracy	Data precision
Interoperability	Data exchange,Interoperability with external systems
Security	Authentication, Authorization, Automatic logoff, Data transmission protection, Stored data protection
F. Compliance	-
Usability	
Understandability	Interface Language, Interface type
Learnability	Online help, Interface learnability, Documentation
Operability	Failure alerts, Recovery procedures, Installation procedures, Update procedures
Attractiveness	-
U. Compliance	-
Efficiency	
Time Behaviour	Interface load time, Concurrent users capacity
Resource Utilisation	Data capacity, Users capacity
E. Compliance	Backups, Log

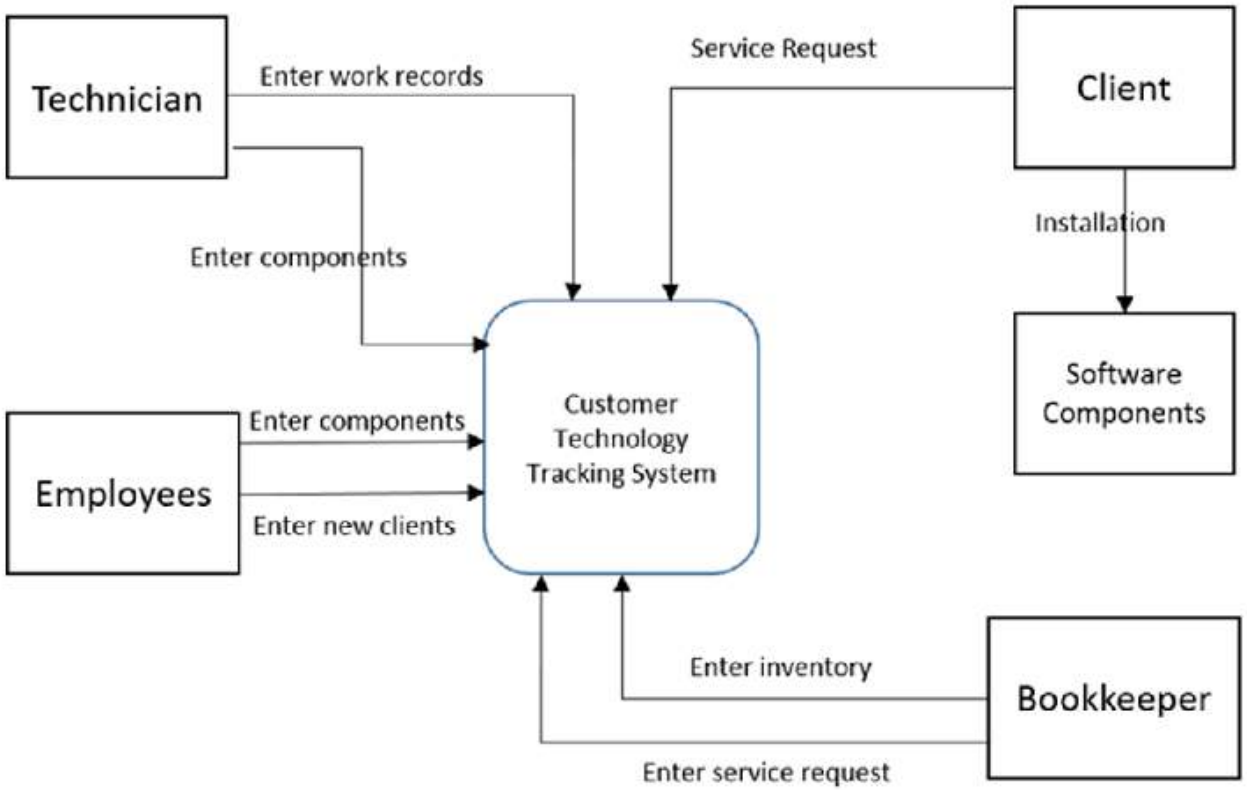
Reliability	
Maturity	Failure alerts
Fault Tolerance	Alternative data storage, Availability, Downtime, Uptime
Recoverability	Backups, Log
R. Compliance	-
Maintainability	
Analyzability	-
Changeability	-
Stability	-
Testability	-
M. Compliance	-
Portability	
Adaptability	Development language
Installability	Platform
Coexistence	-
Replaceability	-
P. Compliance	-



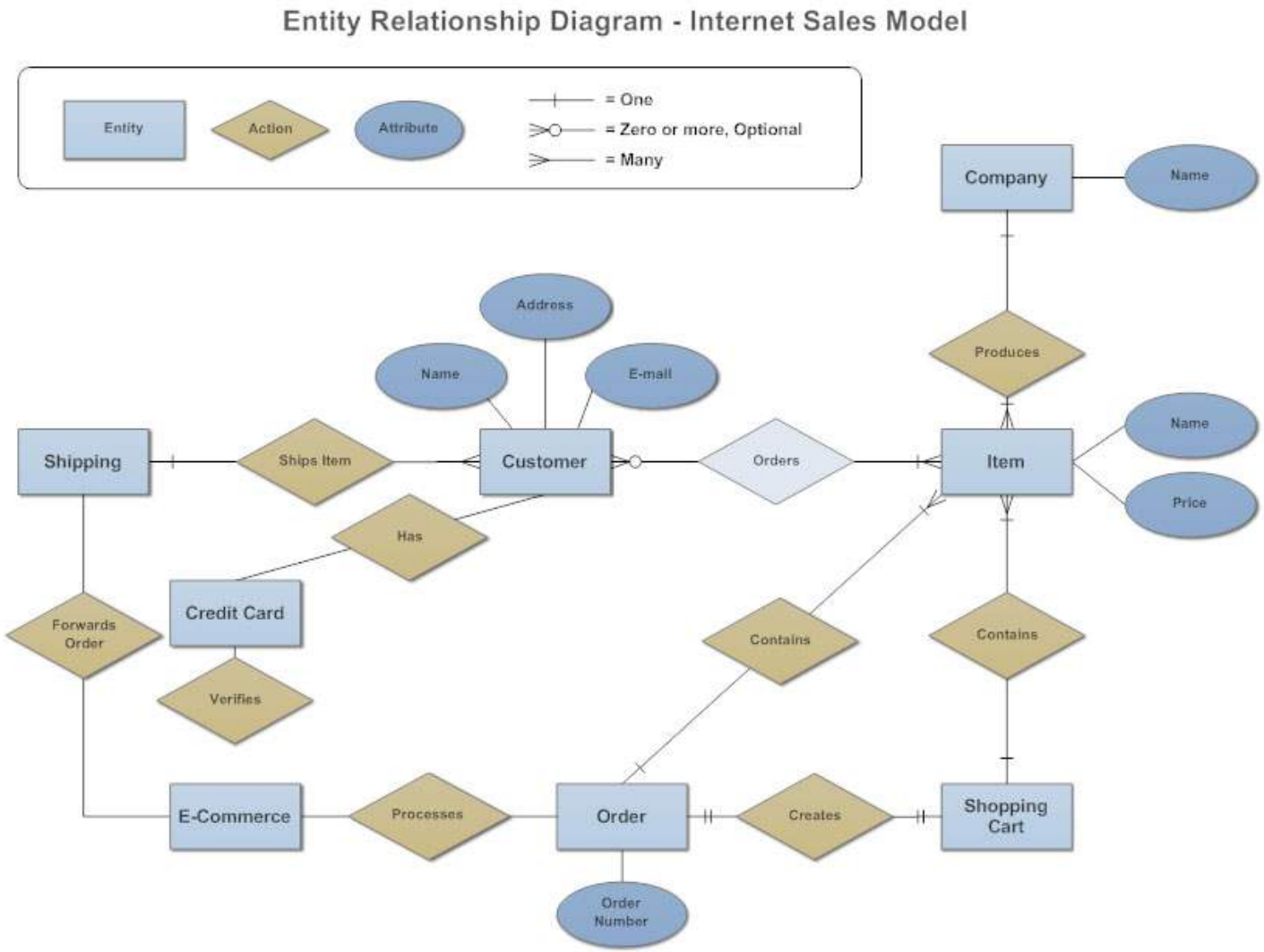
Information flow diagram



Data flow diagram



Context diagram

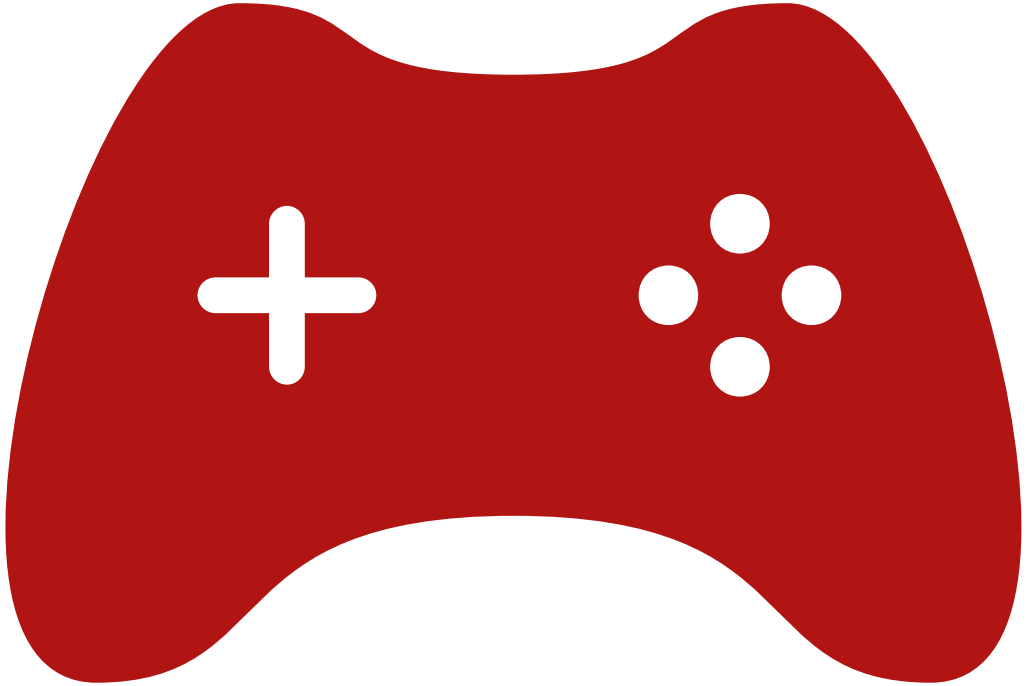


Entity Relationship diagram

Entity: is a fact about a person, place or thing which has to be captured and its data stored
one-to-many relationships
Many-to-many relationships

Systems Analysis Evaluation

Typically, any systems development project will be confronted by such issues as system size, complexity and acquisition method



Quiz Game 2

Systems Analysis and Design
+
Open Source Software

Feasibility Analysis

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Different types of feasibility

- **Economic feasibility:** An assessment of the costs and benefits of different solutions to select that which gives the best value.
- (will the new system cost more than the expected benefits?)
- **Technical feasibility:** evaluates the degree the proposed solutions will work as required and whether the right people and tools are available to implement the solution.
- (will it work?)

Different types of feasibility

- **Operational feasibility:** An assessment of how the new system will affect the daily working practices within the organisation.
- (is the system workable on a day-to-day basis?)
- **Organisational feasibility:** reviews how well the solutions meets the needs of business and anticipates problems such as hostility to the system if insufficient training occurs.
- (considers the effect of change, given a company's culture and politics)

Economic Feasibility Analysis

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Economic Feasibility: *Should We Build It?*

- Identify costs and benefits
- Assign values to costs and benefits
- Determine cash flow
- Assess financial viability
  - Return on investment
  - Break even point

Economic Feasibility Analysis

A range of costs must be included in the feasibility study. These include:

1. **hardware and software purchase costs**;
2. Systems development **staff costs**, if bespoke or tailored solution is chosen
3. **Installation costs**, including cabling, physically moving equipment and bringing in new furniture to house computers
4. **Migration costs** such as transferring data from existing systems to the new system or running the new and original systems in parallel until the reliability of the new system is established
5. **Operating costs**, including maintenance costs, hardware such as replacing parts or upgrading to new versions of software. Staff costs in maintaining the hardware/software and troubleshooting.
6. **Training costs**
7. Wider **organisational costs** such as redundancy payments, in case of job losses

Using financial measures to assess viability of a new system

ROI

- **Return on investment (ROI):** an indication of the returns provided by an IS.
- Calculated by dividing the benefits by the amount of investment and expressed as a percentage
- **ROI = benefits (value) x 100 / Investment (value)**
- Where **benefit value = return - cost**

Using financial measures to assess viability of a new system

NPV

- **Net Present Value (NPV):** a measure of the return from a system which takes into account the variation in monetary value through time.
- Can be calculated with a standard spreadsheet

$$NPV = \text{inital investment} + \frac{\text{Cash flow Year 1}}{(1+r)^1} + \ldots \frac{\text{Cash flow Year n}}{(1+r)^n}$$

Or,

$$NPV = \text{inital investment} + \sum_{t=1}^{t=\text{end of project}} \frac{\text{(Cash Flows at Year t)}}{(1+r)^t}$$

Using financial measures to assess viability of a new system

(**NPV example**)

Initial cost	$6,000
Life of the project	6 years
Annul cash inflow	$2,200
Salvage value	0
Required rate of return	20%

Item	Year(s)	Amount of cash flow	20% Factor	Present value of cash flow
Annual cash inflow	1 - 6	$ 2,200	3.326*	$ 7,317
Initial investment	Now	(6,000)	1.000	(6,000)
Net present value				$ 1,317

Using financial measures to assess viability of a new system

Internal Rate of Return (IRR): a discounted cash flow technique used to assess the return of a project by considering the interest rate which would produce an NPV of zero

Payback period: the period after the initial investment before the company achieves a net benefit

Typical Costs and Benefits Exercise

A business analyst undertaking a cost-benefit analysis will identify both tangible and intangible costs and benefit.

A cost or benefit is **tangible** if a definite numeric value can be set against an item,

while **intangible** costs and benefits cannot be quantified.

Therefore, **intangible costs** are costs that can be calculated.

Tangible benefits are benefits for which a definite measure of improvement can be calculated.

To get a better sense of this aspect, see the exercise below:

- software purchase cost
- user resistance
- reduction in working hours
- improved decision making
- hardware purchase cost
- new working practices
- sales increase
- broader planning horizons
- implementation costs
- disruption during implementation
- training costs
- reduction in customer complaints
- better data integration
- reduction in maintenance costs
- better data quality
- hardware and software maintenance and consumable costs
- reduction in inventory levels
- better cash flow

Group Exercise

Costs		Benefits	
Tangible	**Intangible**	**Tangible**	**Intangible**

Assess where these costs and benefit should be in the grid

Case Analysis [Combined]

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Case Study

Tallinn City Council Case study

Discussion

Questions