

## 2. Introduction to Systems Analysis and Design

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### What is a System?

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At an introductory level, a system can be conceptualised as something that processes input and produces output in the context of IT.

Input could be data entered into a system (e.g., mobile app, accounting software, tax system). The system then processes the input data and produces output in the form of understandable information for the user.

### User-Centric Design

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Prioritising user needs is essential because the systems we produce are intended for users. Understanding users' needs, problems they want to solve, and conditions they want to improve is crucial for designing effective systems.

- ◆ Front-end design focuses on user interfaces through design thinking techniques.
- ◆ Back-end design relates to systems analysis and design activities.

### Importance of Systems Analysis and Design

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Systems analysis and design are essential components of the overall design process. While front-end design is important, it won't function without a back-end system.

The overall objective of systems analysis and design is not solely to support business requirements but to prioritise user needs.

### Steps in Systems Analysis and Design

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#### 1. Requirements Determination:

First, determine the requirements for the system.

Second, understand user needs and functional requirements is crucial.

#### 2. Visualisation:

- ◆ Visualise and communicate the design with the design team, developers, and stakeholders.
- ◆ Visualisation allows for feedback and improvement of the overall design.

# Types of Requirements

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1. **Functional Requirements:** What the system should be able to do for the user.
2. **Non-functional Requirements:** Qualities and aspects such as reliability, adaptability, security, and efficiency.
3. **Usability Requirements:** Focus on user experience, ease of use, learnability, and intuitiveness.

## Modeling Tools and Techniques

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1. **Fundamental Modelling Concepts (FMC):**  
Provides a high-level view of the back-end system components and their relationships.
2. **Unified Modelling Language (UML):**  
A set of diagrams that provide a more detailed view of the back-end system components, information flow, and data processing.