



# Introduction to Information Engineering

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## The Background

- Associated with work of Clive Finkelstein and James Martin late 1970s early 1980s
- IE claimed to be a comprehensive methodology covering all aspects of life cycle.
- Framework within which a variety of techniques are used to develop quality information systems.

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## The Background

- Framework relatively static, techniques used within framework may change - use best currently available to achieve fundamentals. Framework also a project management mechanism.
- Said to be applicable for a wide range of industries and environments.

## Underlying Philosophy

- Basic Premises:
  - Info Systems are central to the survival and growth of business.
  - Their use should be included in the planning of business at the highest level.

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# Where IE is

## Development Methodologies

**Structured**

- **Structured Designed**
- **Structured Analysis**

**Object Oriented**

**Information as an Integrated Object**

**Information Engineering**

- **Data Orientation**
- **Top-Down approach**

## What is Information Engineering?

The application of an interlocking set of formal techniques for the planning, analysis, design, and construction of information systems on an enterprise wide basis (or across a major sector of the enterprise).

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## Characteristics of IE

IE applies structured techniques on an enterprise-wide basis, or to a larger sector of an enterprise, rather than on a project-wide basis.

IE progresses in a top-down fashion through the following stages:

- Enterprise strategic systems planning
- Enterprise information planning
- Business Area analysis
- System Design
- Construction
- Cutover

## Characteristics of IE

- As it progresses through these stages, IE builds a steadily evolving repository (encyclopedia) of knowledge about the enterprise, its data models, process models, and system design.
- IE creates a framework for developing a computerized enterprise.
- IE then separately developed systems fit into this framework.

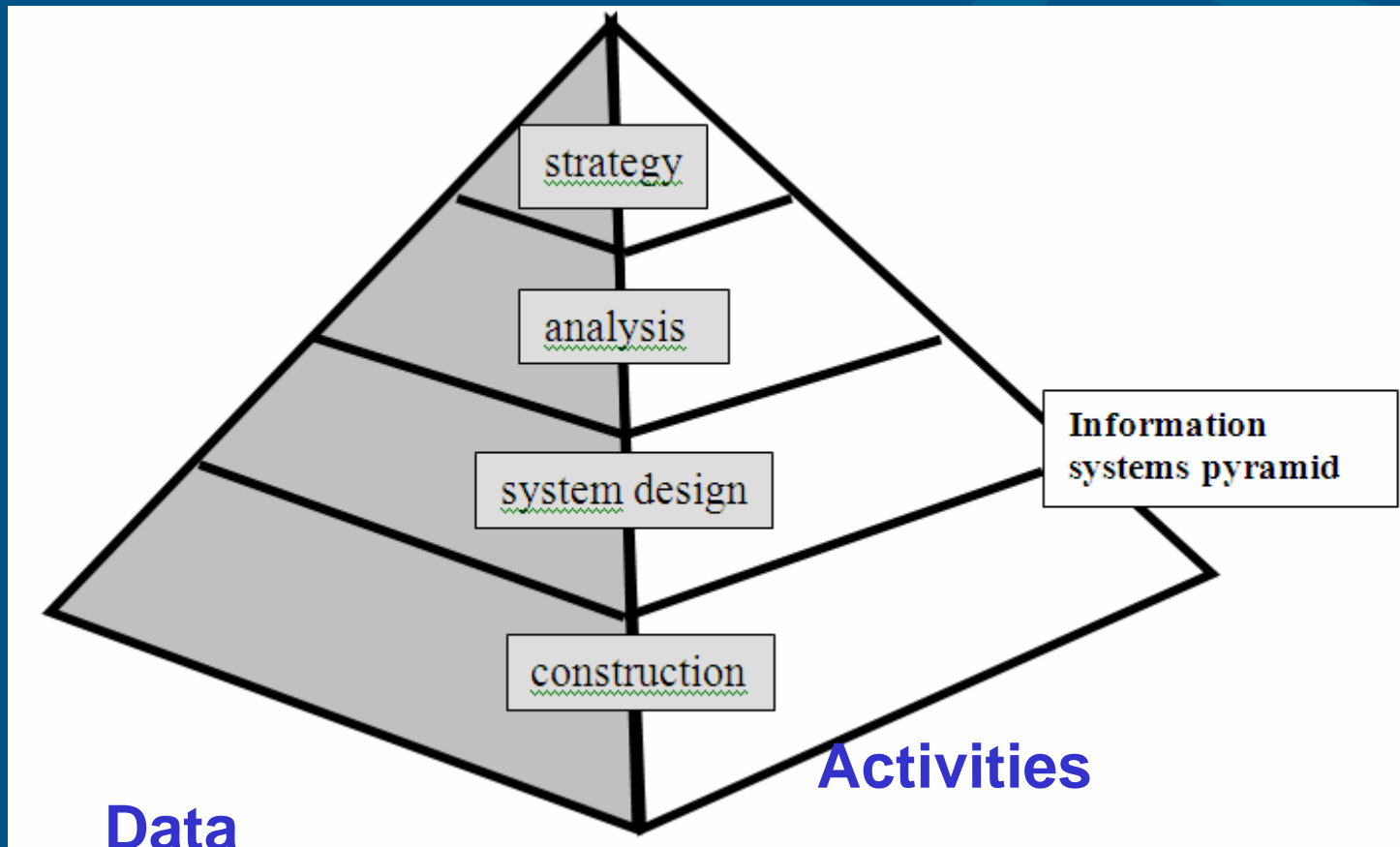
## Characteristics of IE

- Within the framework, systems can be built and modified quickly using automated tools.
- The enterprise-wide approach makes it possible to achieve coordination among separately built systems, and facilitates the maximum use of reusable design and reusable code.
- IE involves end users strongly at each of the stages above.

## Characteristics of IE

- IE facilitates the long-term evolution of systems.
- IE identifies how computing can best aid the strategic goals of the enterprise.
- IE utilized Integrated CASE (I-CASE ) tools to:
  - support the complex data mgt
  - control the analysis and design process through crosschecking/consistency features

# Information System Pyramid



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# Information System Pyramid

## DATA

Strategic overview of the information needed to run an enterprise as effectively as possible

Fully normalized logical data model

Design of the records used by specific procedures.

Application program view of the data

## Strategy

Strategic overview of how technology can be used to improve the enterprise

## Analysis

The processes needed to operate the enterprise, and how they integrate

## System Design

Design of procedures for executing specified processes

## Construction

Design of detailed program logic or input to a code generator

## ACTIVITIES

# Objectives and Principles

IE has two basic objectives:

- to develop integrated systems which support real business needs defined by the business objectives and strategies

- to deliver Information Systems which meet the needs of the business at the time of delivery but in a framework which allows flexibility for a future change

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# Objectives and Principles

Fundamental to IE philosophy is the assertion that data is central to any Information system

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## Objectives and Principles

Important features of the IE method are:

Business Orientation: models of the business, which support business objectives, strategies, management information needs, all form basis upon which systems are developed

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## Methodology Framework Overview

- IEM takes top-down approach. Begins with top management overview of the enterprise as a whole. IE enables strategic approach to be adopted
- Increasingly detailed views are derived as the methodology progresses. Objectives and focus change as methodology progress:  
each stage has different objectives, but overall objectives remain consistent