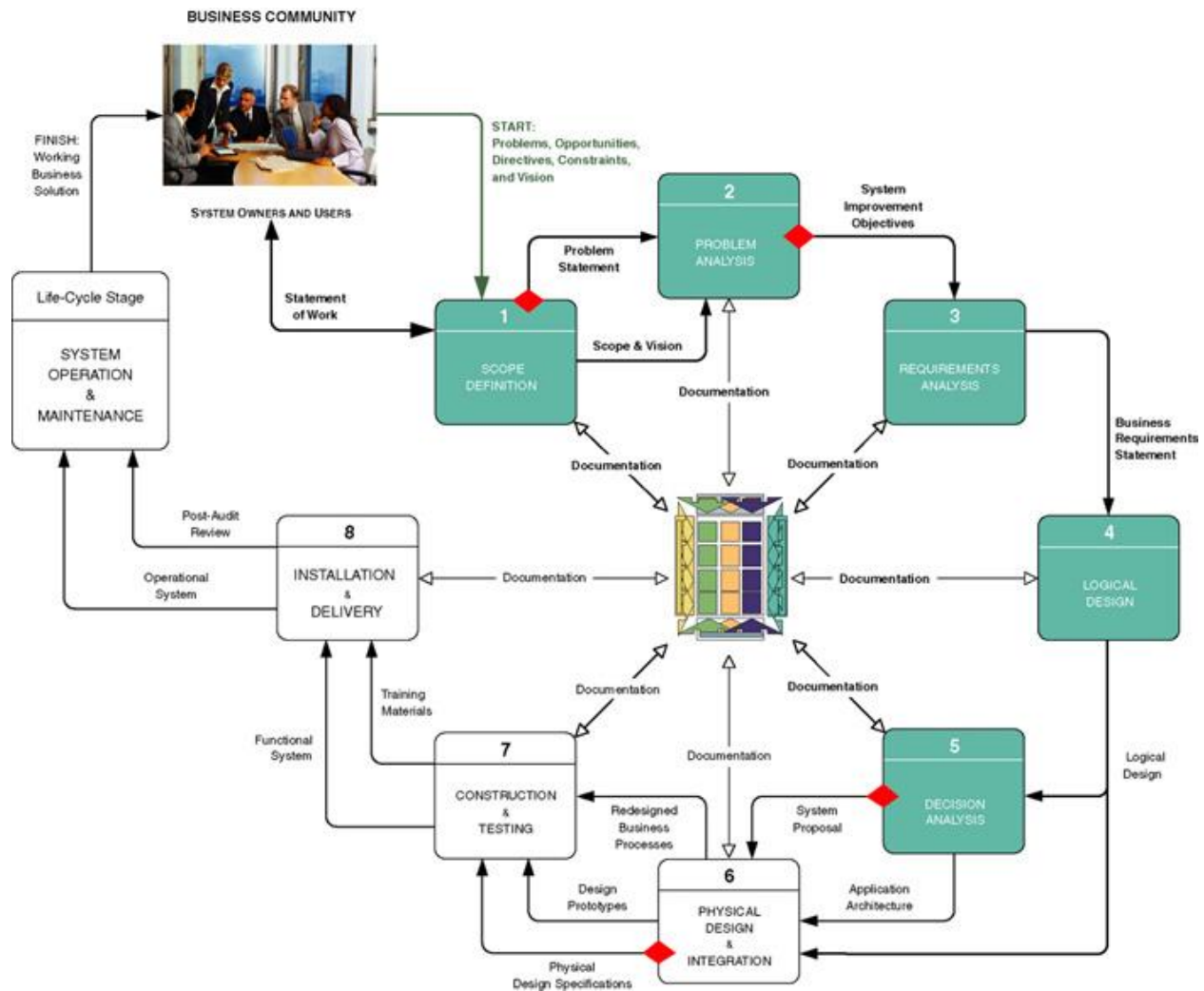What is Systems Analysis ?

Systems analysis – a problem-solving technique that decomposes a system into its component pieces for the purpose of studying how well those component parts work and interact to accomplish their purpose.

Systems design – a complementary problem-solving technique (to systems analysis) that reassembles a system's component pieces back into a complete system—hopefully, an improved system. This may involves adding, deleting, and changing pieces relative to the original system.

Information systems analysis – those development phases in an information systems development project the primarily focus on the business problem and requirements, independent of any technology that can or will be used to implement a solution to that problem.

Context of Systems Analysis

BUSINESS COMMUNITY

SYSTEM OWNERS AND USERS

FINISH:
Working
Business
Solution

START:
Problems, Opportunities,
Directives, Constraints,
and Vision

Life-Cycle Stage

SYSTEM
OPERATION
&
MAINTENANCE

Statement
of Work

Problem
Statement

2
PROBLEM
ANALYSIS

System
Improvement
Objectives

1
SCOPE
DEFINITION

Scope & Vision

3
REQUIREMENTS
ANALYSIS

Documentation

Business
Requirements
Statement

Post-Audit
Review

Operational
System

8
INSTALLATION
&
DELIVERY

Documentation

Documentation

Documentation

Documentation

Documentation

4
LOGICAL
DESIGN

Training
Materials

Functional
System

7
CONSTRUCTION
&
TESTING

Documentation

Documentation

Redesigned
Business
Processes

System
Proposal

5
DECISION
ANALYSIS

Logical
Design

Design
Prototypes

Documentation

6
PHYSICAL
DESIGN
&
INTEGRATION

Application
Architecture

Physical
Design Specifications

Repository

Repository – a location (or set of locations)

where systems analysts, systems designers,

and system builders keep all of the

documentation associated with one or more

systems or projects.

• Network directory of computer-generated files that

contain project correspondence, reports, and data

• CASE tool dictionary or encyclopedia (Chapter 3)

• Printed documentation (binders and system

libraries)

• Intranet website interface to the above components

Model-Driven Analysis Methods

Model-driven analysis – a problem-solving approach that emphasizes the drawing of pictorial system models to document and validate both existing and/or proposed systems. Ultimately, the system model becomes the blueprint for designing and constructing an improved system.
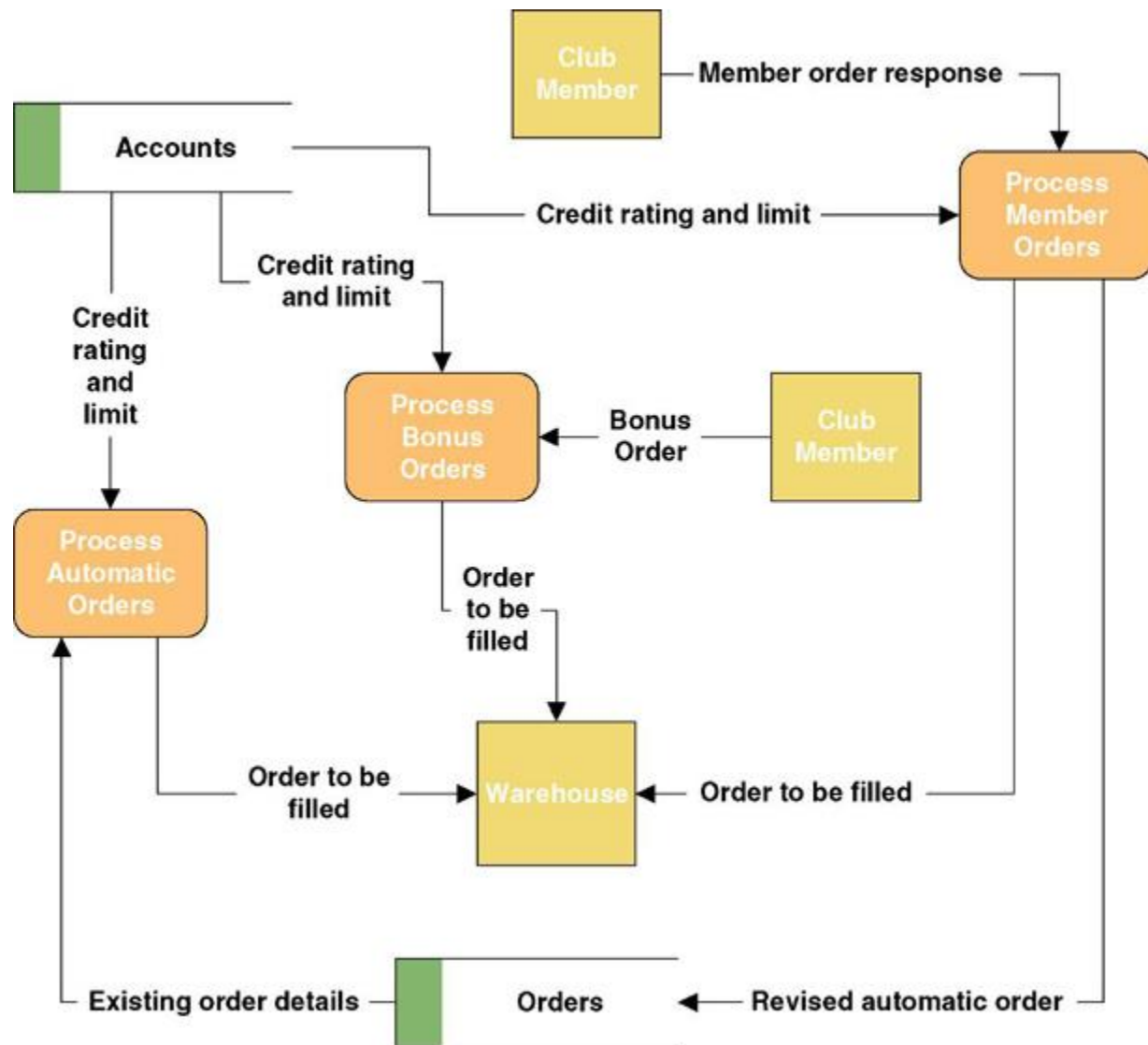
Model – a representation of either reality or vision. Since "a picture is worth a thousand words," most models use pictures to represent the reality or vision.
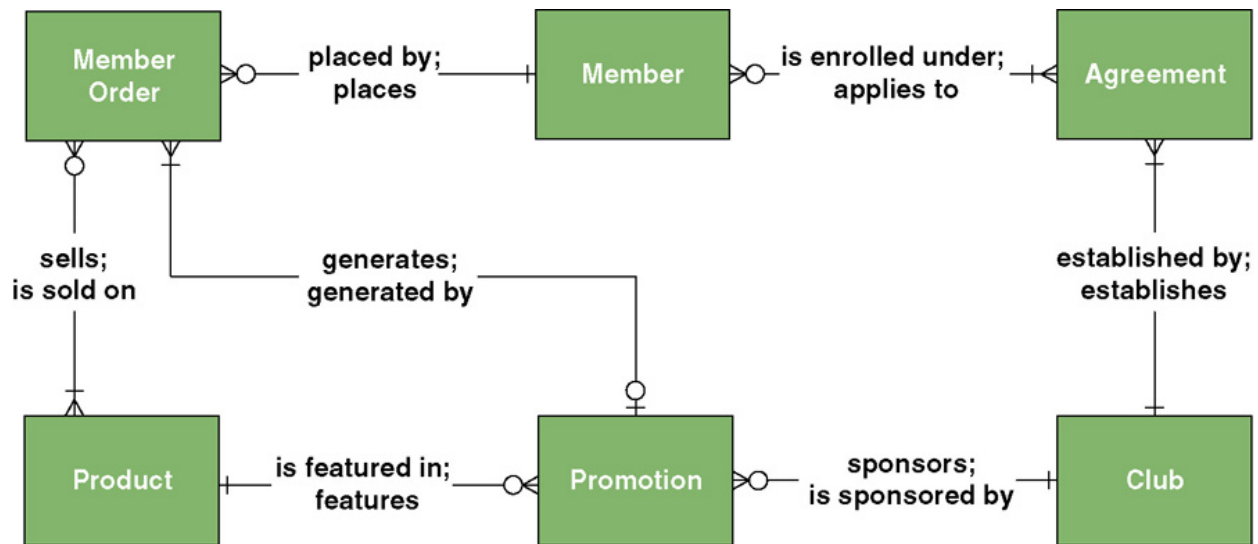
Model-Driven Approaches

• Traditional Approaches

• Structured Analysis

• Focuses on the flow of data through processes

• Key model: data flow diagram

• Information Engineering

• Focuses on structure of stored data

• Key model: entity relationship diagram

• Object-Oriented Approach

• integrates data and process concerns into objects

• Object – the encapsulation of the data (called properties) that describes a discrete person, object, place, event, or thing, with all the processes (called methods) that are allowed to use or update the data and properties. The only way to access or update the object's data is to use the object's predefined processes.

• Unified Modeling Language (UML)

A Simple Process Model

A Simple Data Model

Member Order — placed by; places — **Member** — is enrolled under; applies to — **Agreement**

sells; is sold on

generates; generated by

established by; establishes

Product — is featured in; features — **Promotion** — sponsors; is sponsored by — **Club**

A Simple Object Model

STUDENT

-ID Number
-Name
-Grade Point Average

+Admit()
+Register for Classes()
+Withdraw()
+Change Address()
+Calculate GPA()
+Graduate()

0..*

has record for>

COURSE

-Subject
-Number
-Title
-Credit

0..*

+Create a Course()
+Delete from Course Master()
+Change in Course Master()

TRANSCRIPT COURSE

-Semester
-Division
-Grade

+Add()
+Drop()
+Complete()
+Change Grade()