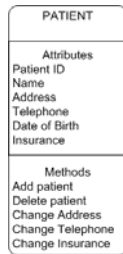Component 4: Introduction to Information and Computer Science

Unit 9/Part c: Components and Development of Large Scale Systems

Object Modeling

- Overview, terms and concepts
- Unified Modeling Language (UML)

PATIENT

Attributes
Patient ID
Name
Address
Telephone
Date of Birth
Insurance

Methods
Add patient
Delete patient
Change Address
Change Telephone
Change Insurance

PATIENT (Actor) → MAKE APPOINTMENT (Use Case)

Uniform Modeling Language

- Structure diagrams
  - Class, Object, Composite Structure, Package, Component, Deployment
- Behavior diagrams
  - Use Case, Activity, State Machine
- Interaction diagrams
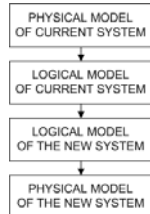 - Sequence, Timing, Communication

Logical vs Physical Models

- Logical model

- Physical model

- Four-model approach:

| PHYSICAL MODEL OF CURRENT SYSTEM |
| LOGICAL MODEL OF CURRENT SYSTEM |
| LOGICAL MODEL OF THE NEW SYSTEM |
| PHYSICAL MODEL OF THE NEW SYSTEM |

Development Strategies

- Internet
- Outsourcing
- Make or Buy
- Prototyping

Internet

- Software as a Service (SaaS)
- Traditional development vs Web-based Systems development
- Web 2.0 and cloud computing

Outsourcing

- Application service providers (ASP)
- Internet business services
- Offshore outsourcing

Make or Buy

- Develop software in-house
- Purchase a software package
- Customize a software package

Planning → Analysis → Make, build / Purchase → In-house System / Customized software / Commercial software package → Implementation → Support/Security

Prototyping

- Replaces physical design by the paper-and-pencil process.
- Modern, engineering-based approach to design.
- Iterative process between designer and users.