AIM: An XML-Based ECA Rule for Supporting a Framework for Managing Complex Information

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Over View

- Introduction
- AIM language
- AIM Specification Component
- The Complex Information Model in AIM
- AIM Query Component
- Summary

Introduction

- My Project is the second stage of an on-going research
- My Project Objectives:
  - Generalizing and enhancing the concepts and management framework done in the first stage;
  - Developing a high-level language for facilitating the management of the generalized framework;
  - Developing intermediate models for implementing the language using the available technologies, such as XML and DBMS;
  - Developing a proof-of-concept system;
  - Evaluating the work done in the second stage

Introduction

Examples
Research Focus
Not the Research Focus

Generalizing The Work Done

First Stage

Clinical Guidelines

Formalization And Modelling Language

Main Research Focus

Medical Patient Plan

Execution and Manipulation

Healthcare Record

Second Stage

Stock Exchange Regulation

Enriching these Functionalities

-Modelling Language
-Maintenance Support

Customer Order

Enriching these Functionalities

Stock Items

Best Practice

Complex Information

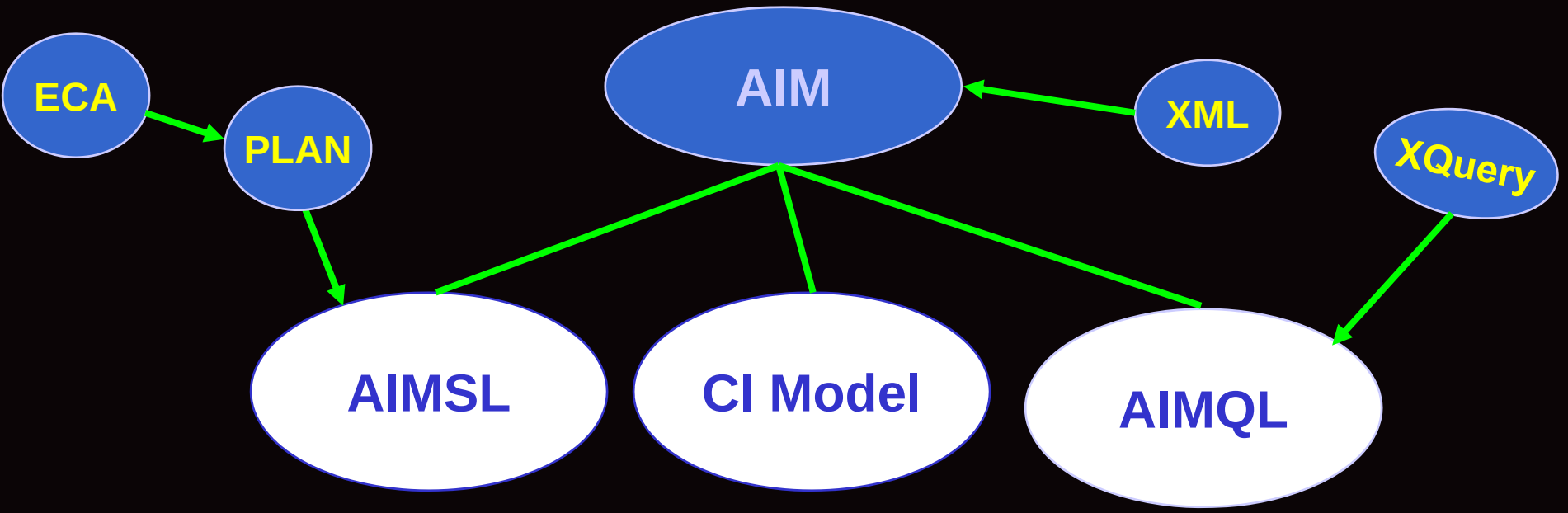
Domain Information

Introduction

- The Complex Information is produced by incorporating the best practices into the daily management.
- The medical plans and customer orders are examples for Complex Information produced by incorporating clinical guidelines and stock regulation into the disease and order management, respectively.
- Managing Complex Information
- Integrating the Complex Information Management into DBMSs, which are utilized to manage the domain information

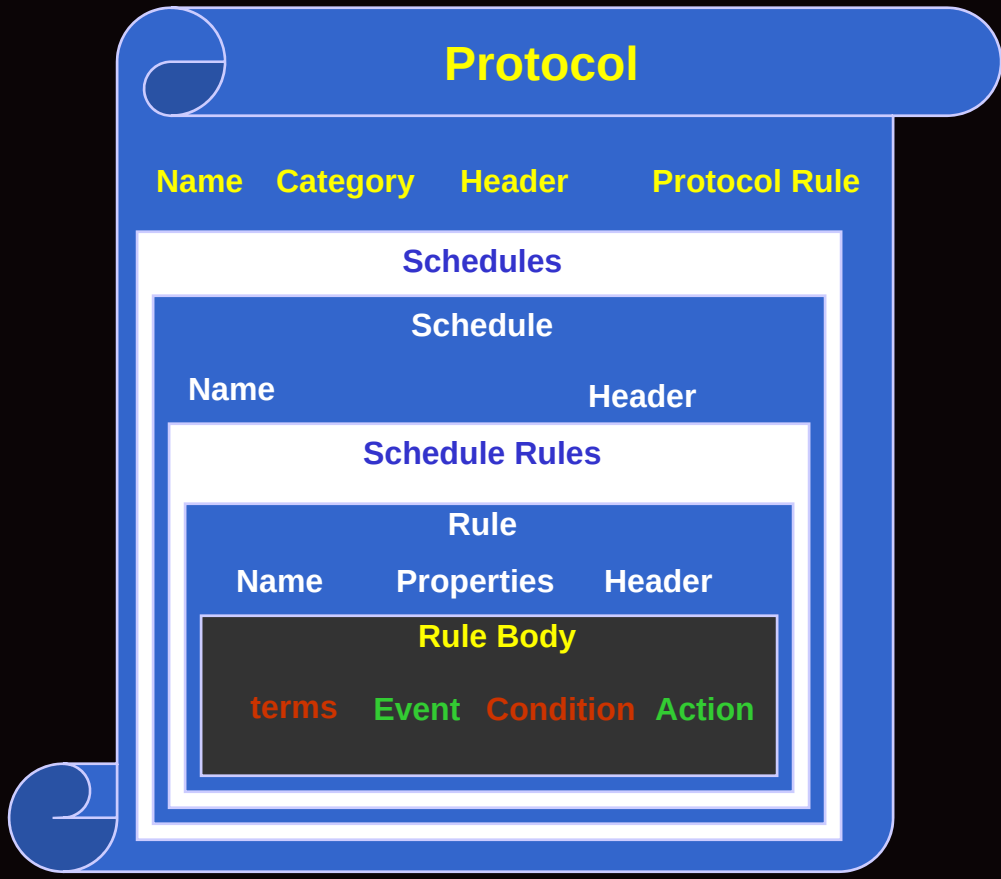
AIM Language

- Supporting the SEM Framework at three plans:
- AIM is an XML-Based language
- AIM Components



AIM Specification Component (AIMSL)

- The main concepts in AIMSL model are:
  - Protocol
  - Schedule
  - Rule
- Generic and Customization.



AIM Specification Component (AIMSL)

- AIMSL utilizes ECA Rules to represents the best practice.
- In AIMSL, ECA Rules are distinguished by:
  - The event, condition, and action are defined using domain application terms, ex:

    Rule 1: on two days after patient admission, order the blood test.
  - Temporal Events:
    - Absolute time or Relative time event

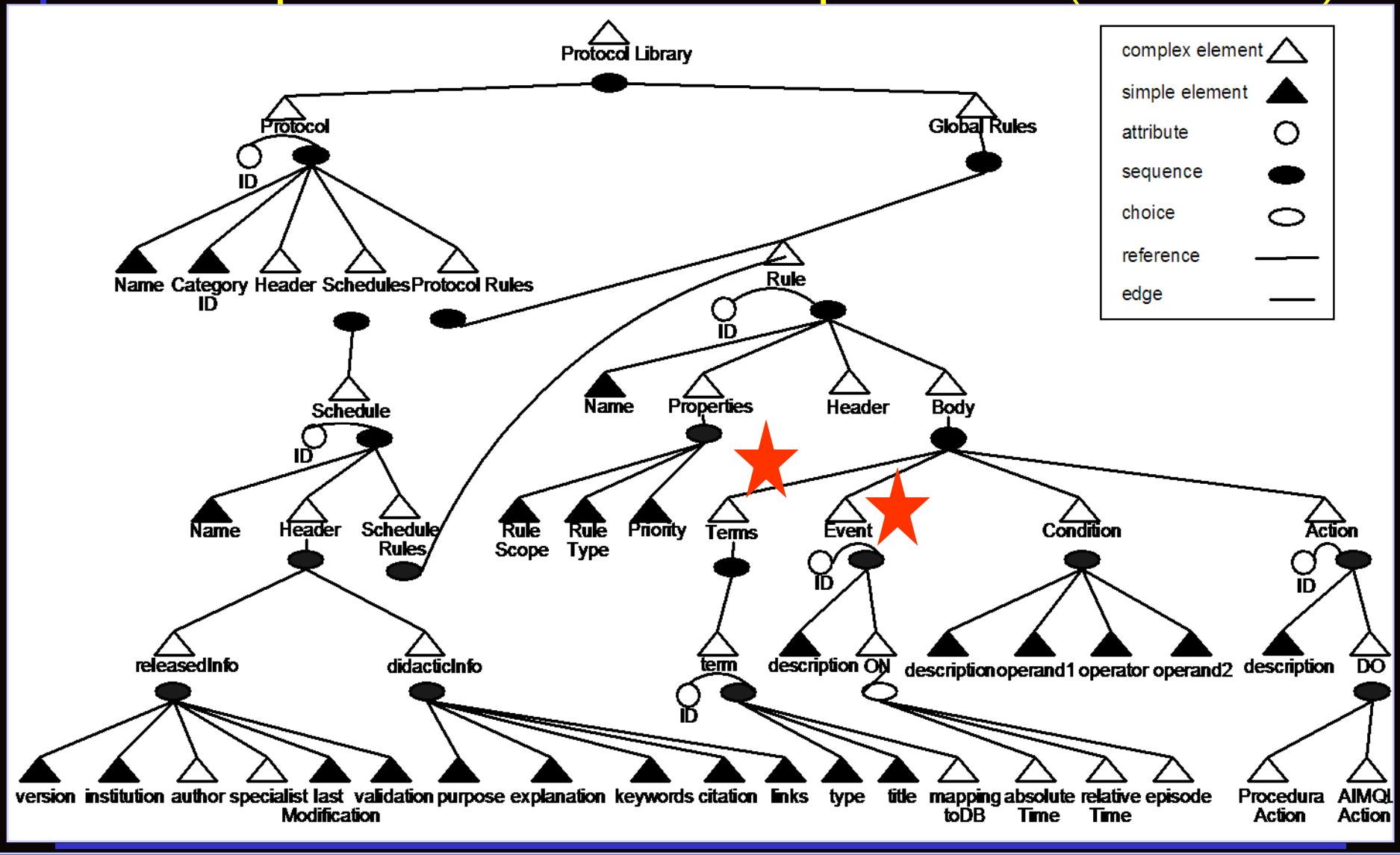
      on June 1, 2008

      on day 2 of patient admission
    - Once-off or Repetitive with before or after support

      on day 2 of patient admission

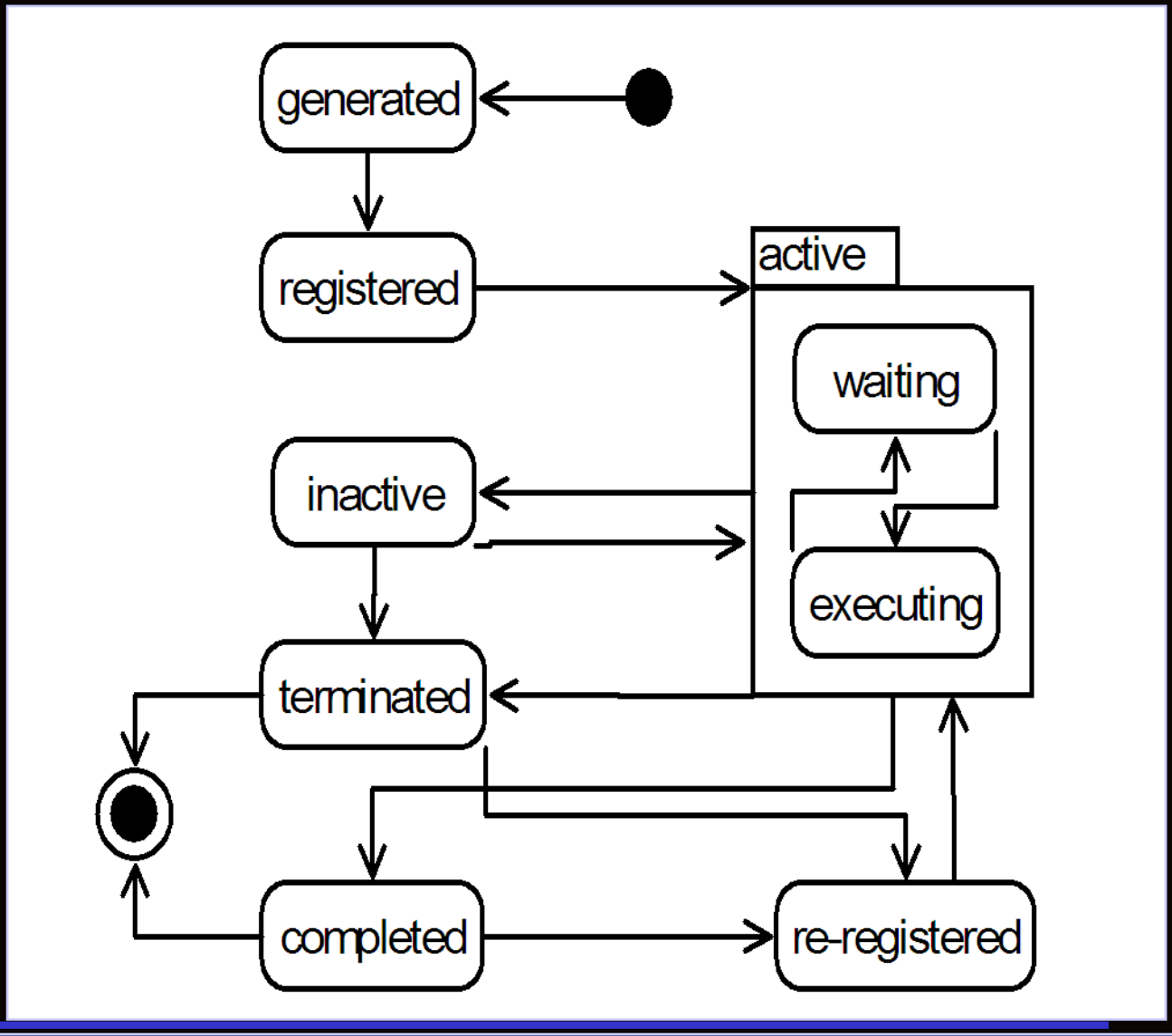
      every 10 hours before the operation time

AIM Specification Component (AIMSL)



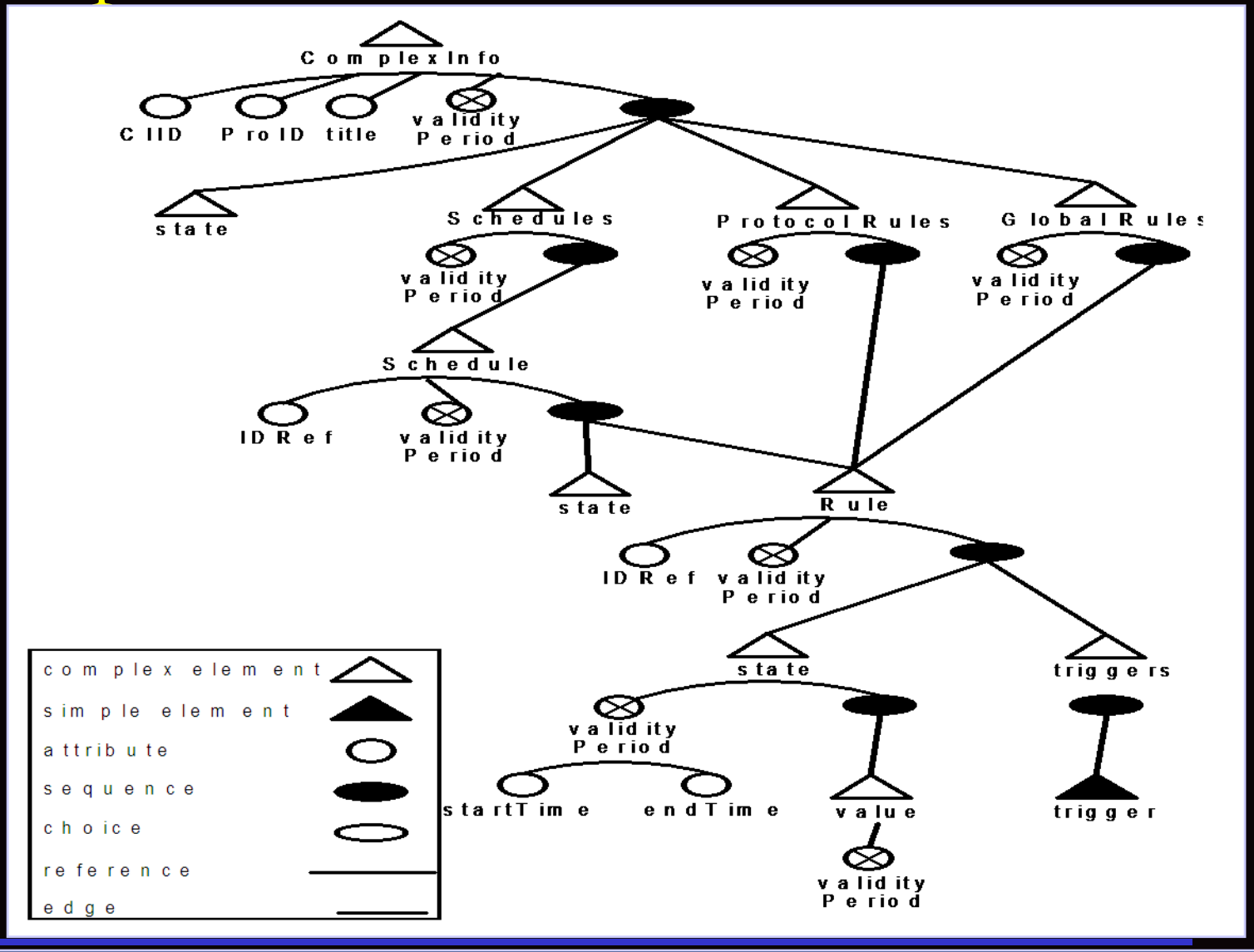
The Complex Information Model in AIM

Complex Information Life-Cycle in AIM

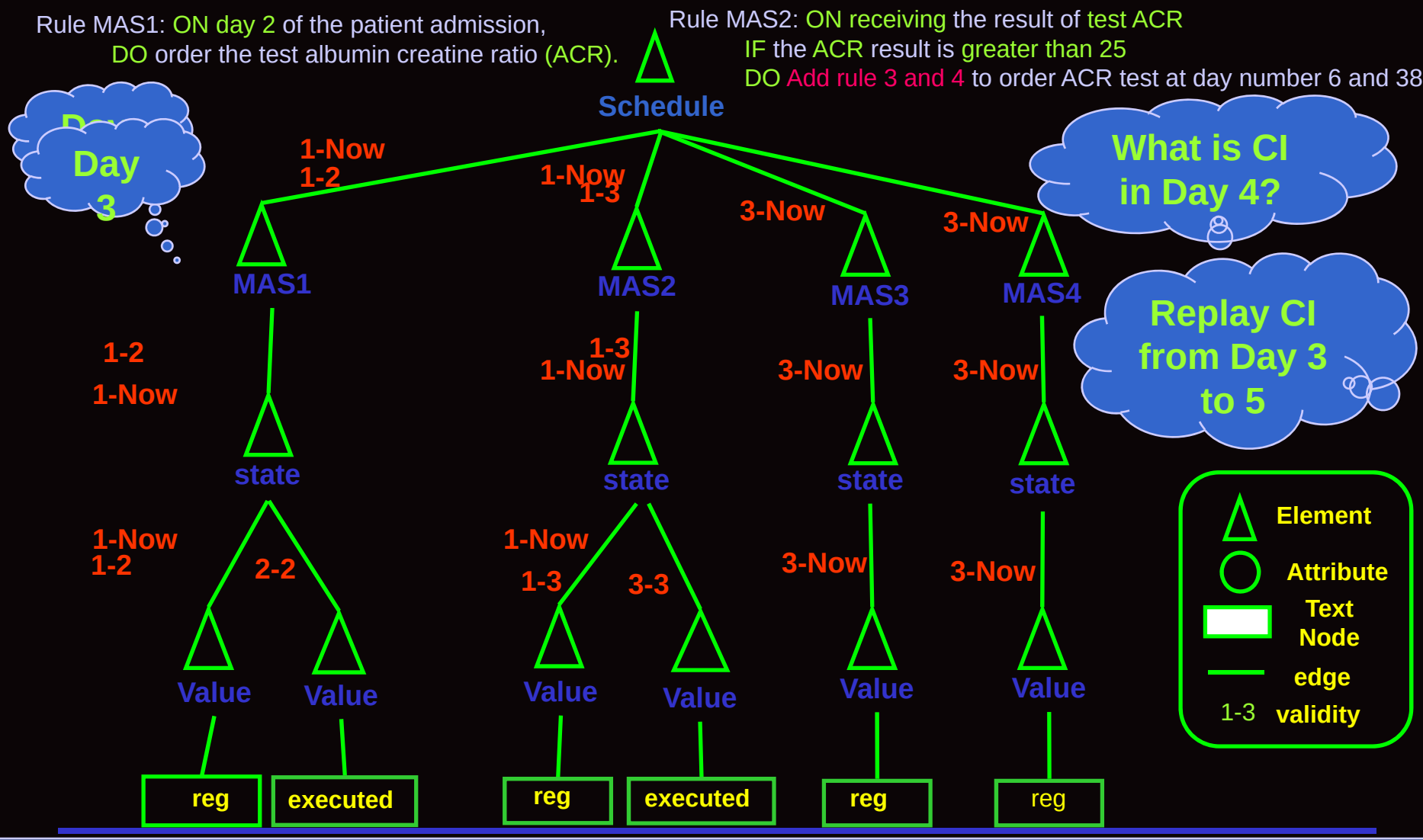


The Complex Information Model in AIM

Complex Information Schema in AIM



The Complex Information Model in AIM



AIM Query Component (AIMQL)

- Requirements
  - Move complexity from user/application code to high level declarative language
  - Changes Propagation
  - Declarativity
  - XQuery –based language
  - Convenient for human to read and write
- XQuery Extensions:
  - Manipulation Operations: add, remove, modify, activate, deactivate, terminate, and Fire.
  - Temporal Query Support for the replay functionality

AIM Query Component (AIMQL)

Natural language:
Replay the plans of category no CAT, which was working through out the past Y days.

AIMQL

```
REPLAY Complex Information CI
SHOW When, How, Why OF CI
Where CI.cast("day") >= Y
and CI.meets(NOW)
and CI[@catID=CAT]
```

Summary

- Our Research focuses on providing a comprehensive management for the complex information
- K-CAMP provides a generic approach and framework for Complex Information Management
- AIM language consists of:
  - AIM Specification Component
  - The Complex Information Model in AIM
  - AIM Query Component

Thank You