

A decorative graphic consisting of a thin gold circle. A thick black left square bracket is positioned on the left side of the circle, and a thick gold right square bracket is on the right side. A horizontal bar with a gold-to-white gradient is overlaid across the middle of the circle, containing the main title text.

A Multimodal Participatory Tutoring System for the Rural Children

An Intelligent Tutoring System Authoring Tool

[Introduction]

- Many children in rural areas either do not attend schools or dropout at a very early stage.
- Reasons:
 - Paucity of good teachers
 - Monotonous learning process and study materials
 - No attention to individual needs of the students.
- Aim of this project:
 - Build a tutoring system that will provide a solution to the above problems

[Objectives]

- Provide an interactive environment for the children to access the educational material at their own pace
- A platform to teachers to make teaching more effective and interesting.
- Facility to present the same courseware in different forms and delivery paths
- Have adaptability on assessment of the student's status

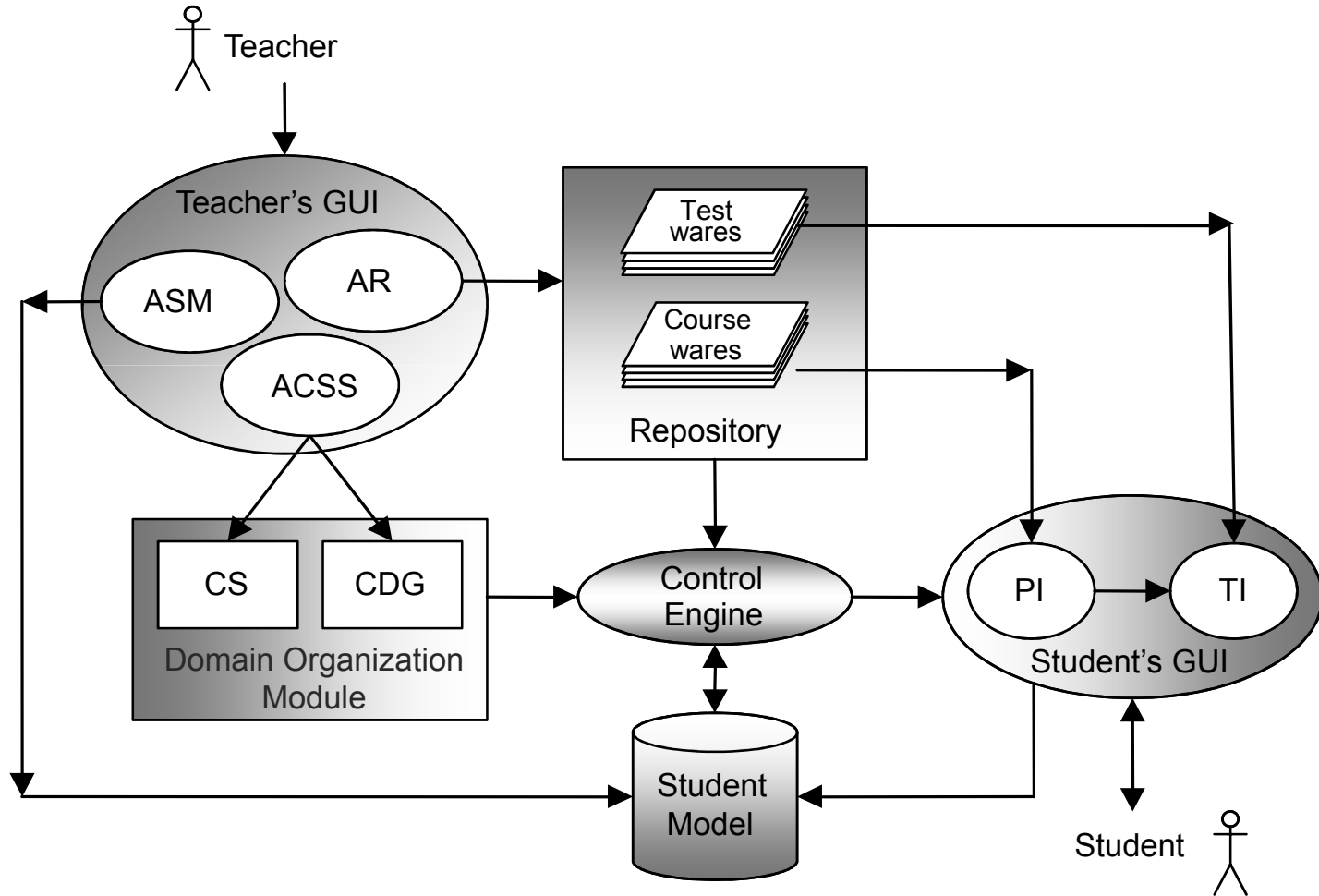
[Objectives]

- Develop a repository of course ware from different sources in different languages
 - Create a platform for sharing the course ware.
 - Facility for different courseware, built elsewhere, to be integrated with the system
- To deploy the systems at pilot sites for field testing and system refinement through user feedback

[System Description]

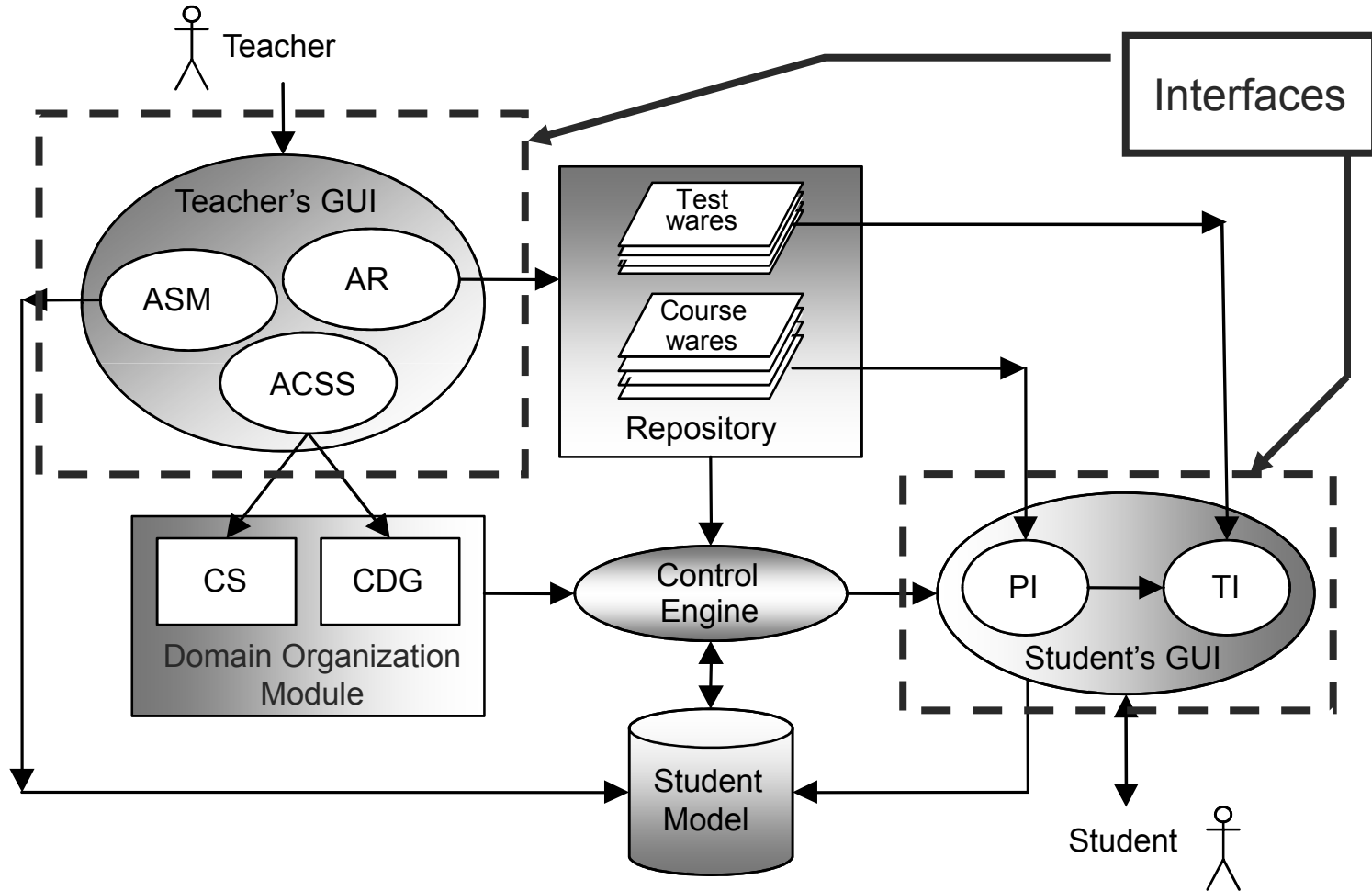
- Architecture
- Domain Model
- Student Model
- Control Engine

[The Architecture]

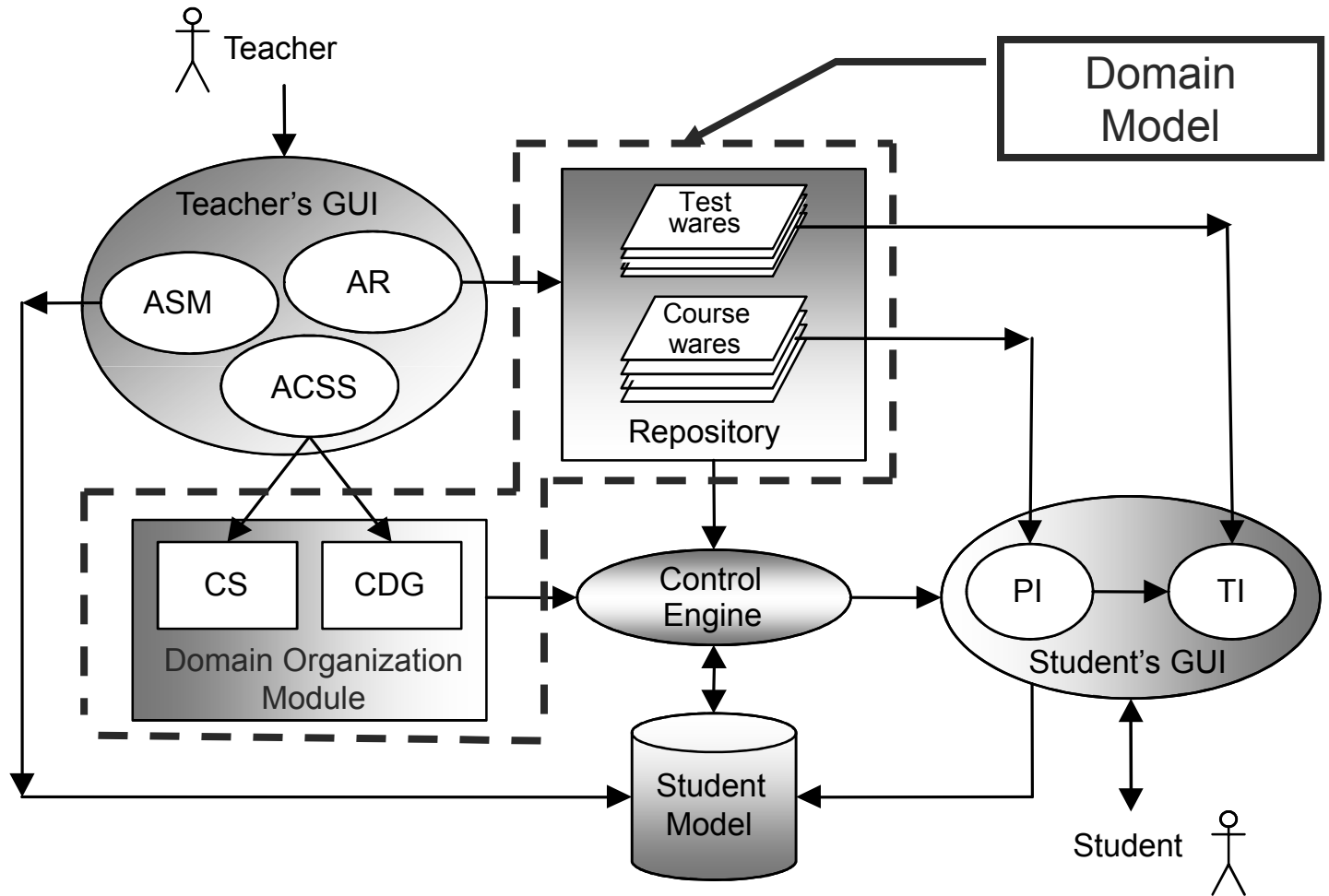


ASM: Authoring student model, AR: authoring repository, ACSS: Authoring concept state space, CS: Content Structure, CDG: concept dependency graph

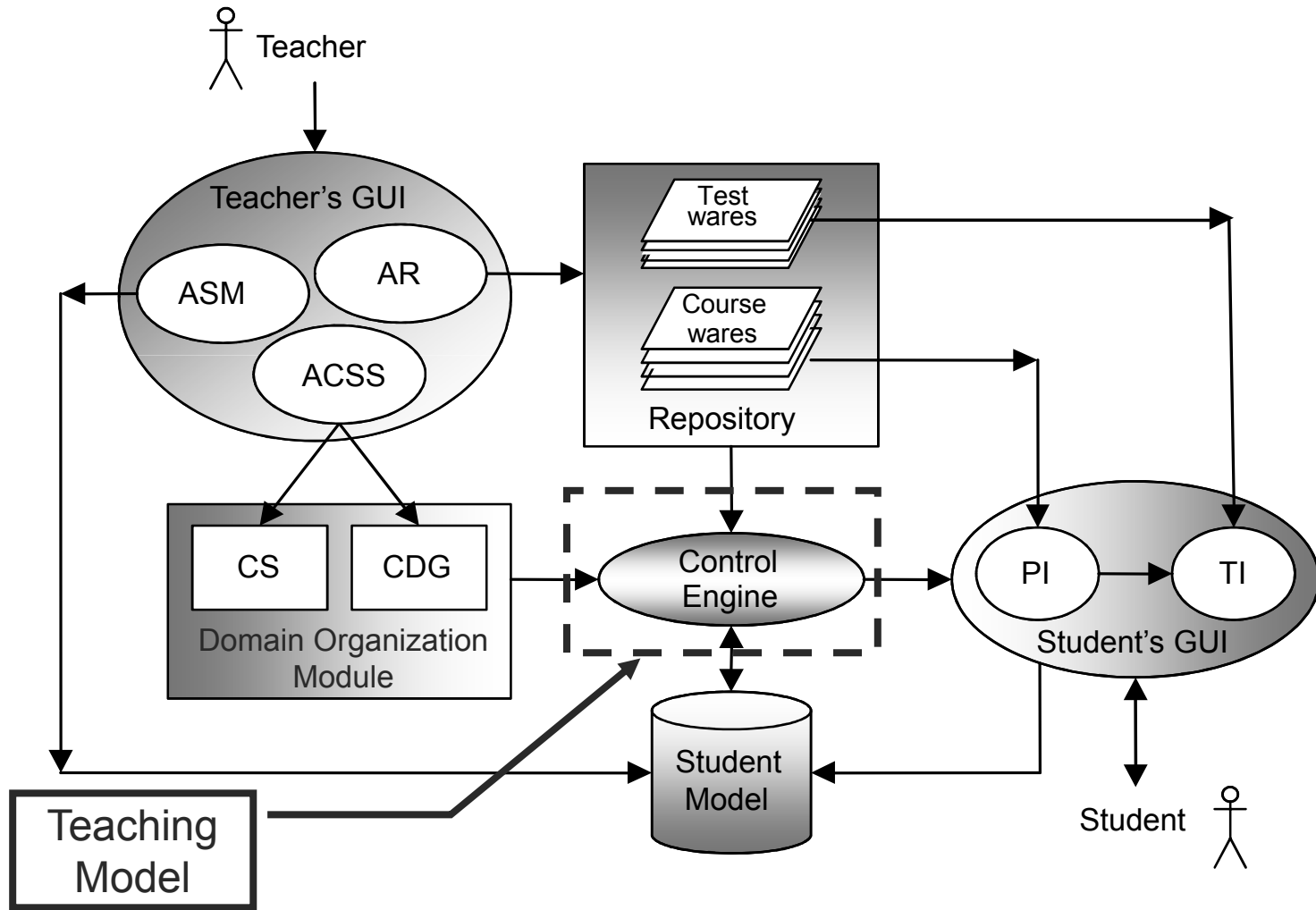
The Architecture



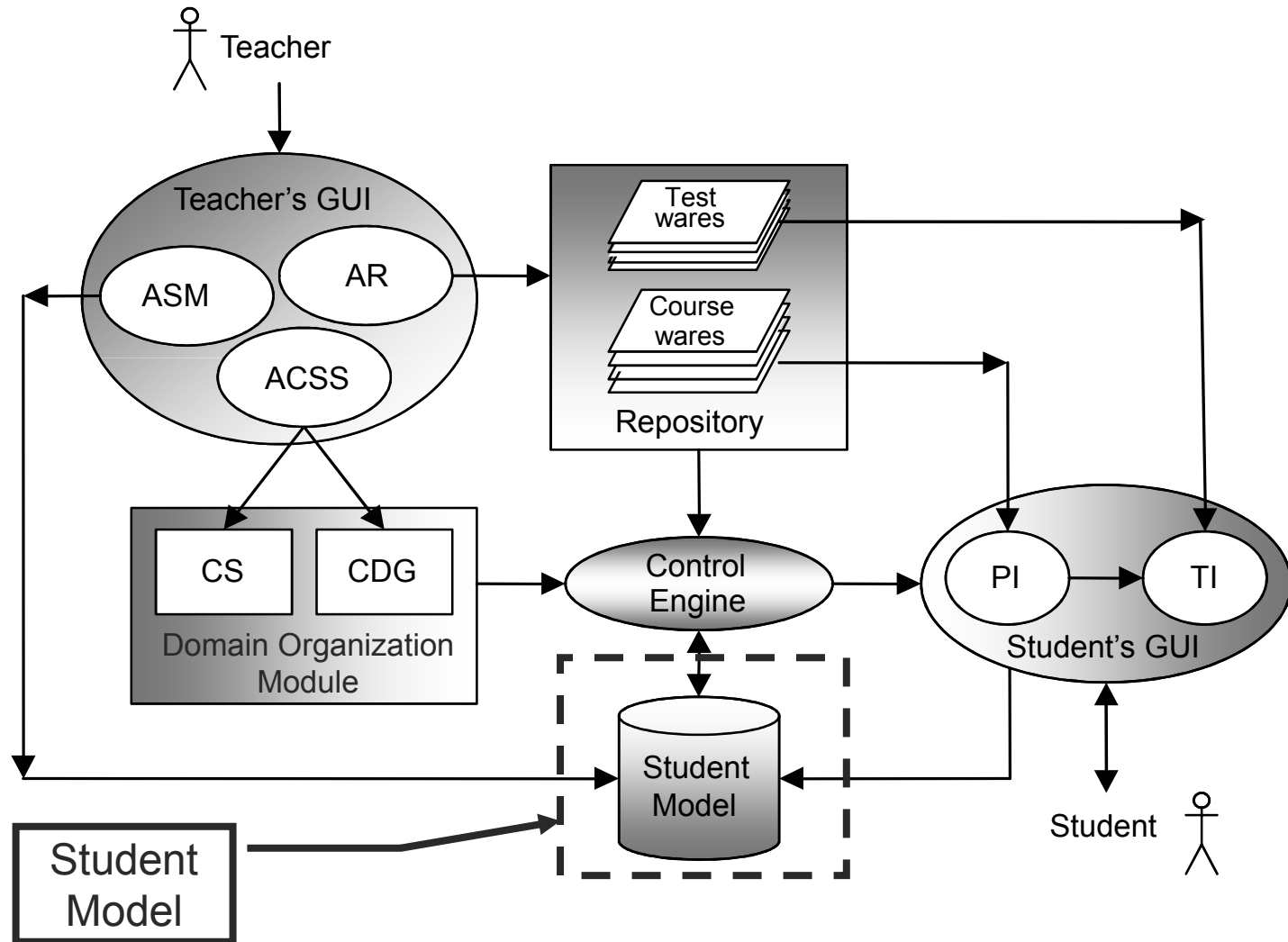
The Architecture



[The Architecture]



[The Architecture]



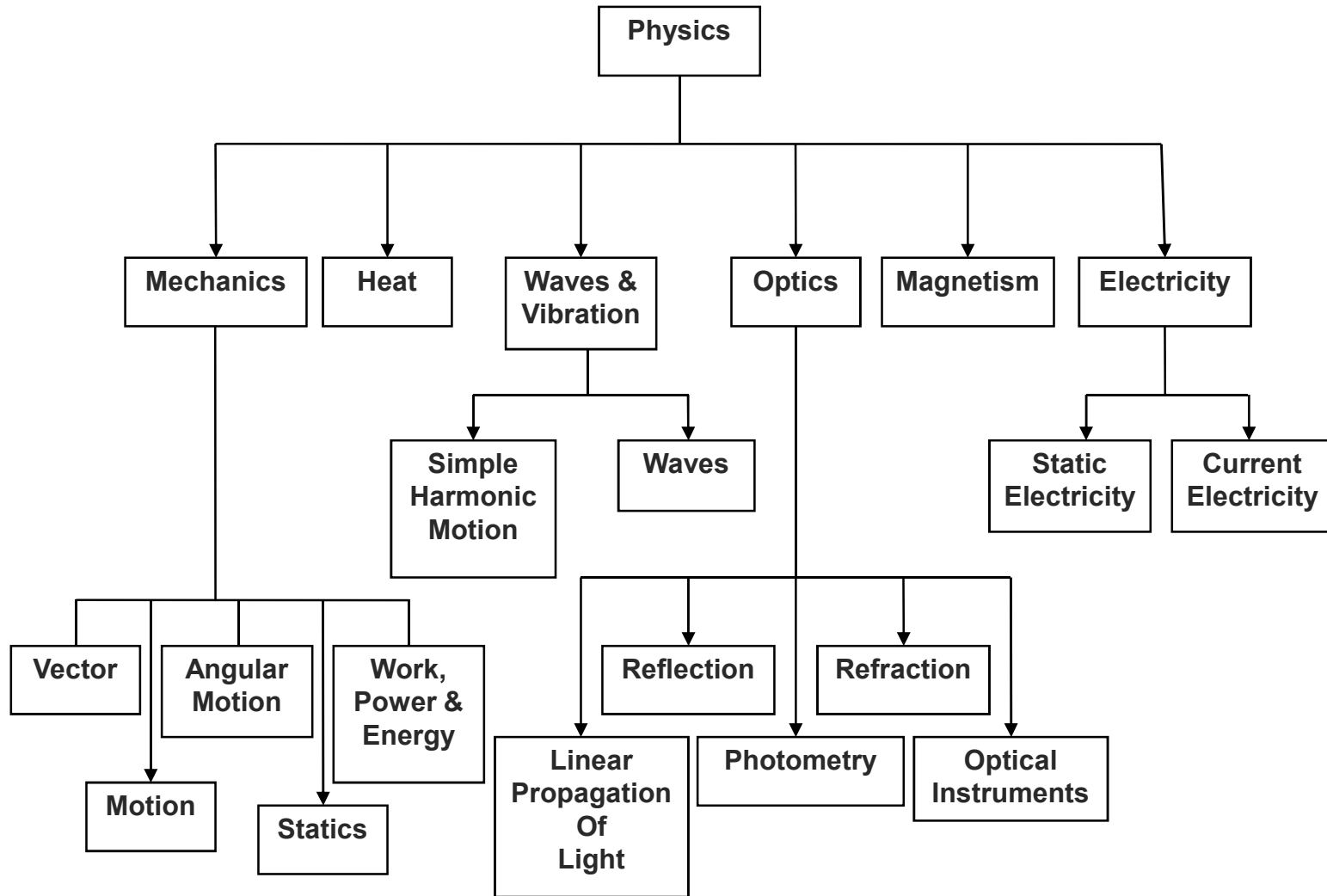
[Domain Model]

- The domain model contains all the information about the courses, their topics, study materials etc.
- This module has two major parts,
 - First is the **Domain Organization Module (DOM)** and the
 - **Repository**

[Domain Model]

- Domain Organization Module
 - This module is the knowledge base of the system
 - Here the structure of the courses are organized using two structures
 - Content Tree (CT)
 - Topic Dependency Graph (TDG)

[Content Tree]



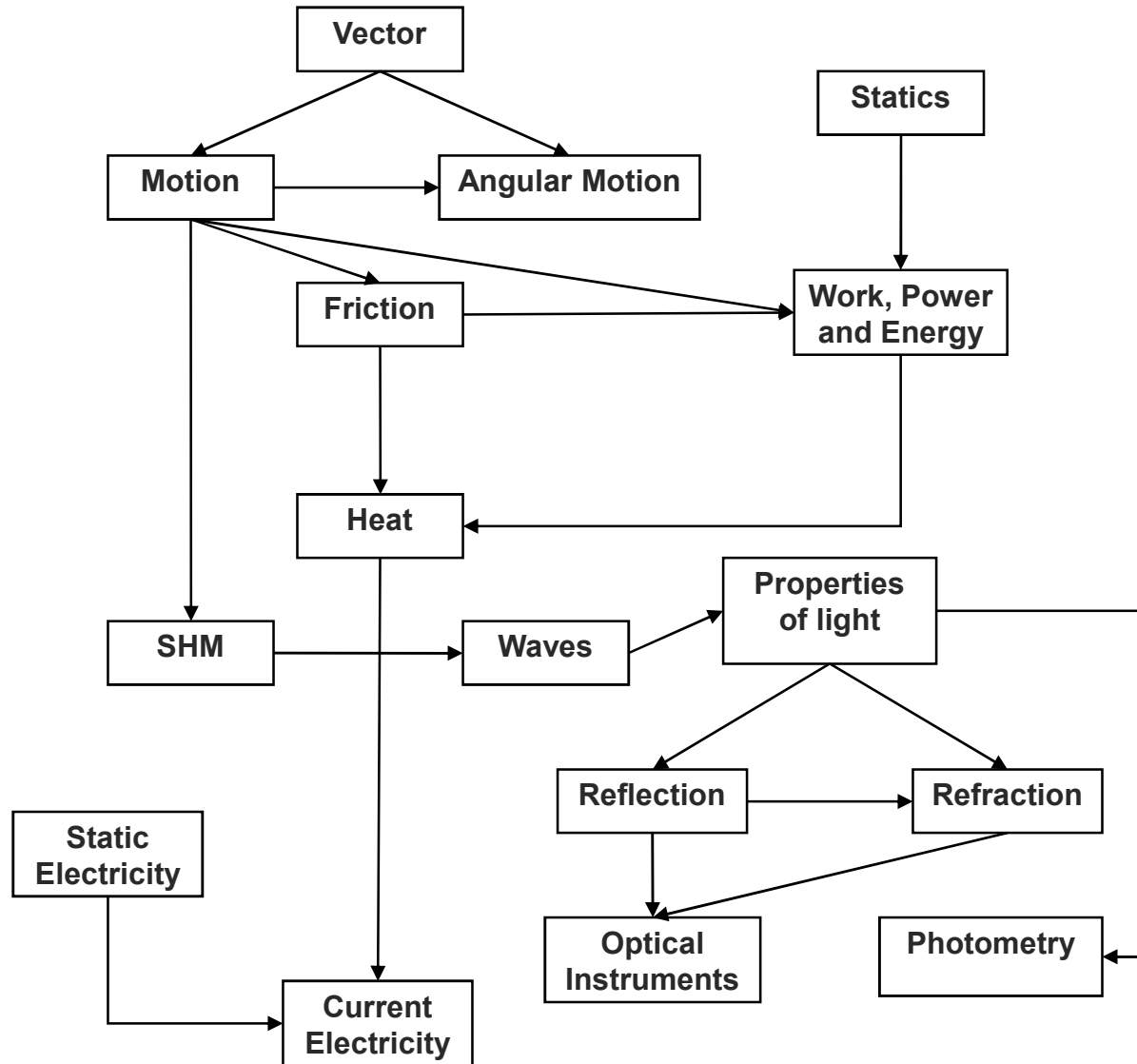
[Content Tree]

- The Content Tree keeps all the sections, topics, concepts of a course in a tree like structure.
- Name of the course is kept at the root.
- Subsequently the sections, topics are kept in the lower parts of the tree.
- An edge in the tree depicts a part-of relationship.

[Content Tree]

- The information kept for each topic,
 - Hardness (difficulty level of the topic)
 - Importance (how important this topic is w.r.t the course)
 - Prerequisites (the topics which need to be covered before this one)
- List of concepts (all the concepts which are important and a part of this topic)

[Topic Dependency Graph]



[Topic Dependency Graph]

- The topics and their prerequisite relationship are kept in the Topic Dependency Graph.
- In this graph the nodes are the topics from the corresponding CT
- The edges depict prerequisite relationship between these topics.

[Topic Dependency Graph]

- There can be numerous paths (teaching plan) in this graph from the starting topic to the terminating one.
- The task of the teaching module is to find the most optimal path for a particular student

[Repository]

- The repository is a collection of study and test materials
- Existing documents can be downloaded and plugged into the repository.
- The documents in the repository are annotated with proper tags for efficient retrieval
- The repository is a shared pool of contents, where anybody can contribute from anywhere.