

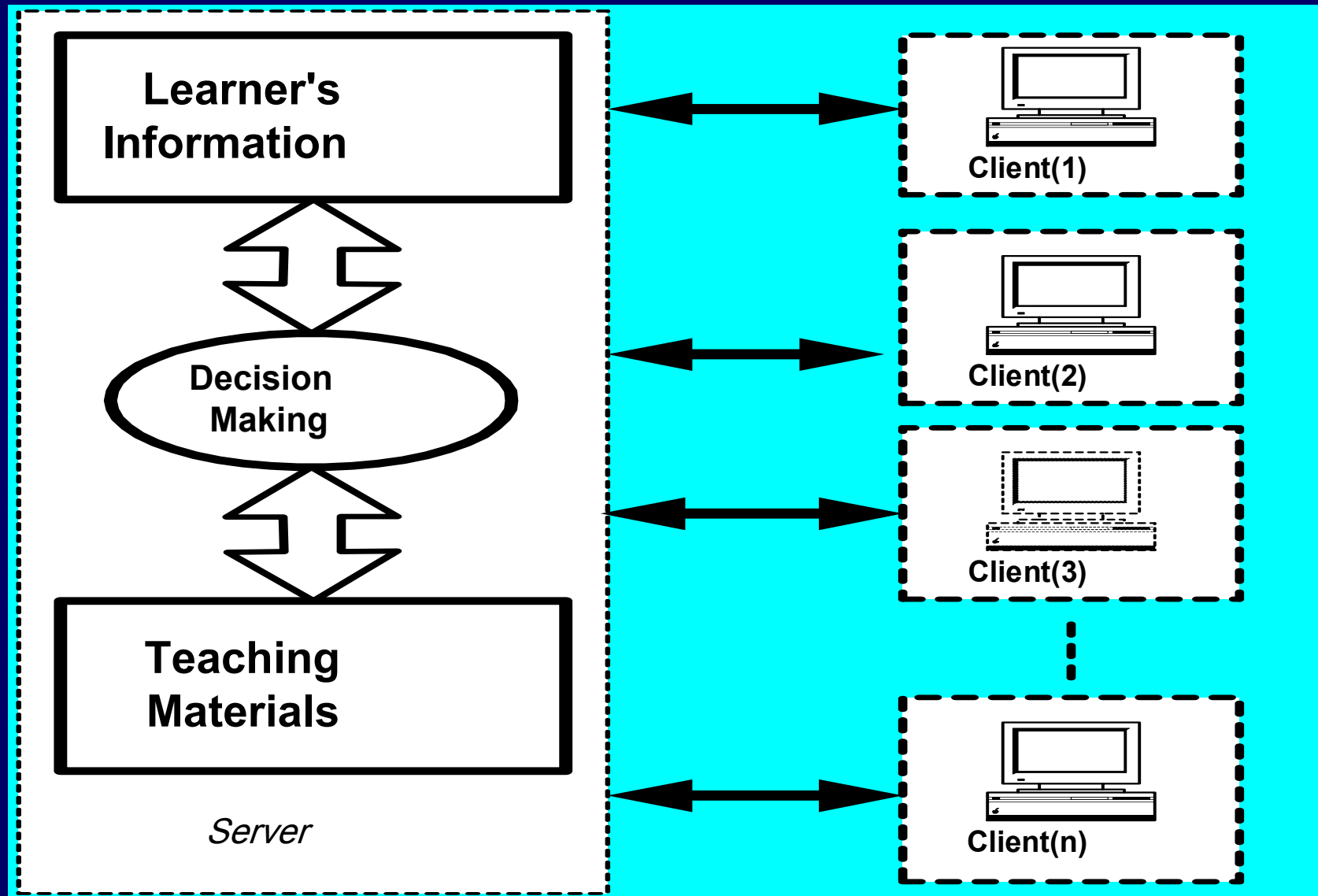
# **Interactive E-Learning Systems: New Trends**

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# System Layout



# Computer Aided Learning

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- To obtain real-sense in learning & training, there is a need to explore more advanced technologies.



**Virtual Reality**

- One of the most important requirements for interactive e-learning systems is to adopt suitable methods for knowledge acquisition and real-time modeling of the actual world. In fact, human thinking and reasoning involve vague information, therefore, educational systems should be able to cope with such vagueness.



**Soft-Computing**

# Intelligent Decision Making & Management

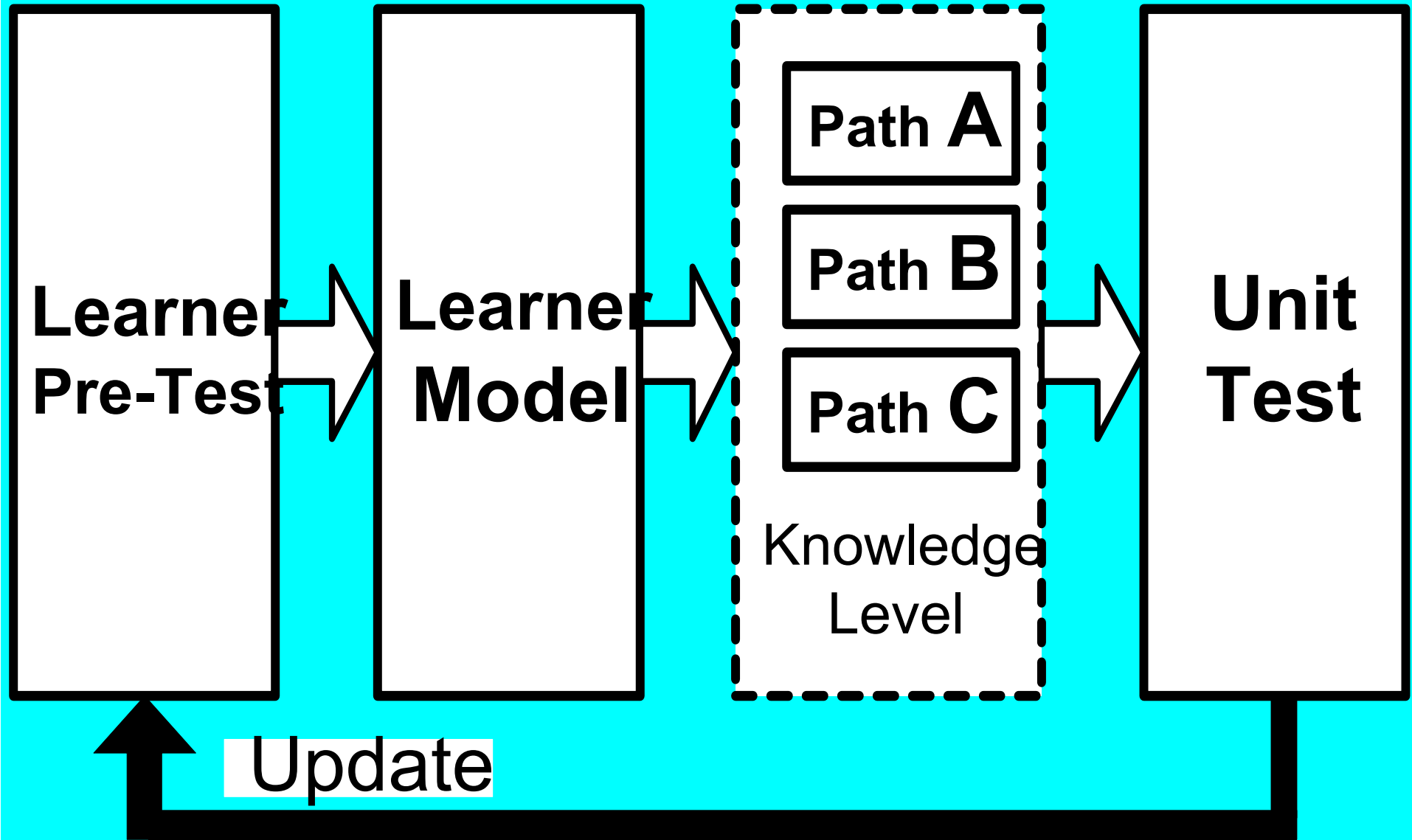
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Human thinking and reasoning involve vague information; therefore, educational systems should be able to cope with such vagueness.

Vagueness is related to the following source:

- Information provided by the learner.
- The current knowledge level of the learner.
- The evaluation of the learner level.
- The experience of the instructor.
- The objective behind the course materials.

# Learning System:



## Virtual Reality Technology

- Virtual reality is something, which is not real, but can be considered to be real while using it.
- Virtual reality provides an environment where multimedia tools can be used to create interactive interfaces and real-time response.
- Virtual reality can be used to evaluate how a user can achieve new experience in training without the support of physical environment.

# Virtual Reality System Components

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## Hardware Requirements:

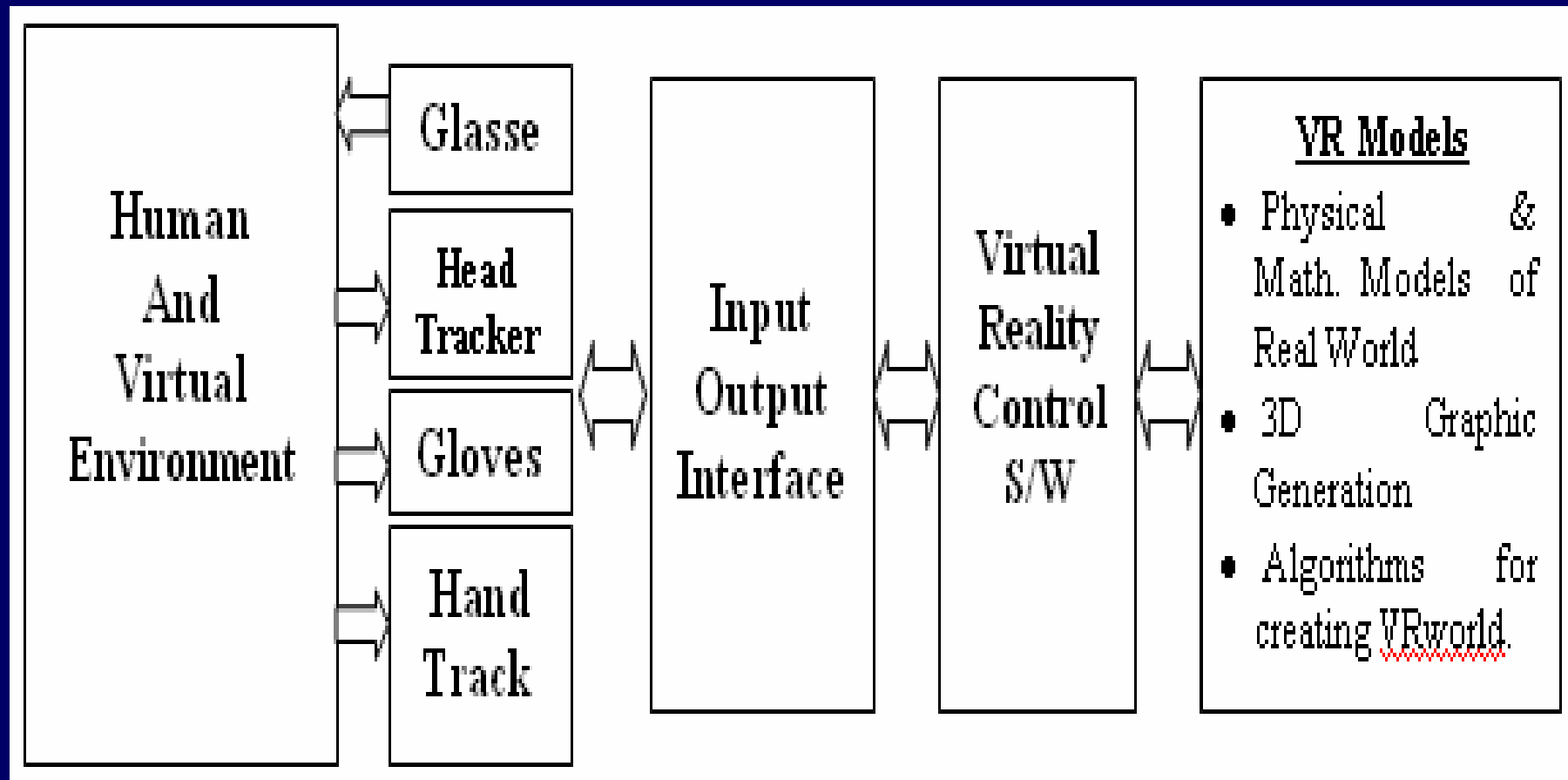
- Sensors and actuators,
- Head-coupled displays, and
- A personal computer with full multimedia facilities.

## Software Requirements:

- **Modeling virtual worlds:** using AutoCAD, 3Dstudio,.....
- **Physical simulation:** computer animation systems,
- **Virtual reality toolkits:** software environment to support a wide range of applications.

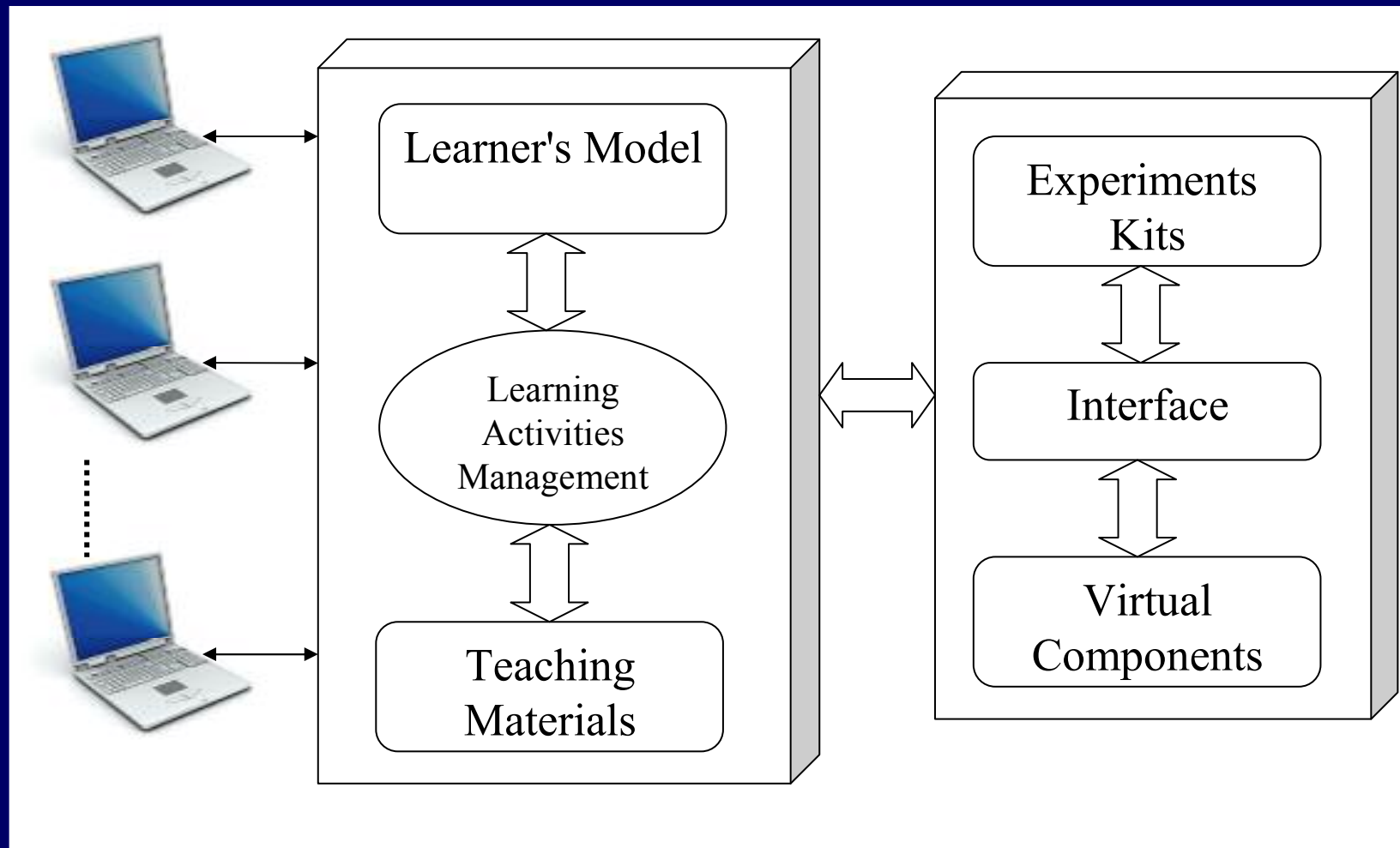
# Virtual Reality for E-Learning:

- Virtual reality: H/W & Simulation S/W to create a virtual world.
- A typical virtual reality system consists of four components:

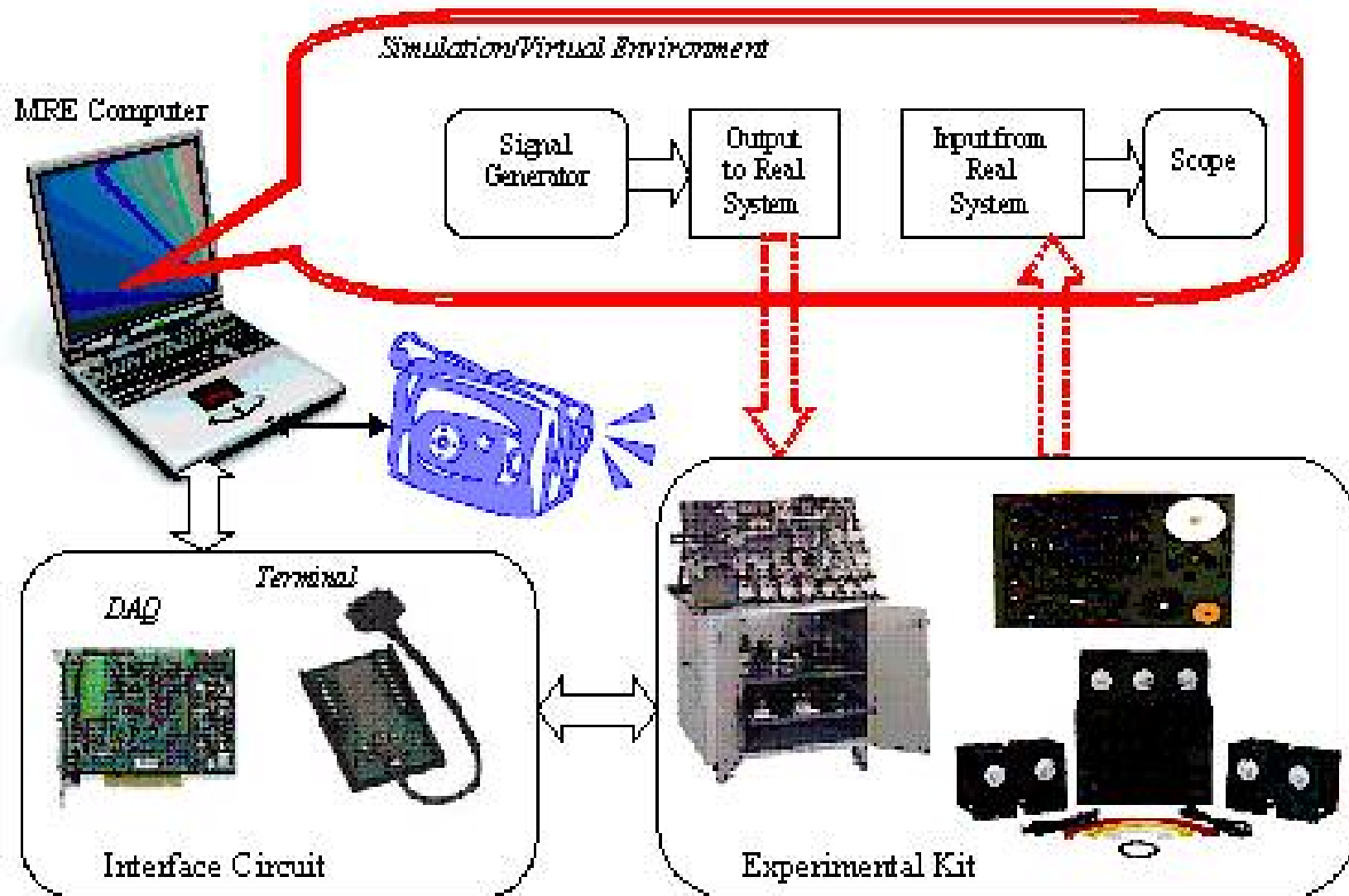




# Mixed Reality Environment for Interactive E-Learning:



# MRE structure for online experiments.



# Conclusions:

- Special hardware and software are required for virtual and interactive e-learning systems.
- The teaching material for practical courses (experiment components, set up, and related theory) can be integrated with on-line access by the user through internet.
- Learner modeling and knowledge management for interactive e-learning systems are based on soft-computing techniques.
- The learning activities management is taken place according to the actual knowledge level of the learner. The system can provide the learner appropriate teaching materials according to his/her knowledge level.