

IMPLEMENTATION SUPPORT

Objectives:

- ❖ **Programming Tools for interactive systems provide :**
 - a means of effectively translating abstract designs and usability principles into an executable form
 - different level of services for the programmer

- ❖ **Windowing Systems :**
 - central environment for the programmer and the user
 - allowing a single workstation to support separate user-system threads of action simultaneously

- ❖ **Interaction Toolkits :**
 - allowing the programmer to describe behaviors of objects at a level similar to how the user perceives them

- ❖ **User Interface Management Systems (UIMS) :**
 - the final level of programming support tools
 - allowing the designer and the programmer to control the relationship between the presentation objects of a toolkit with their functional semantics in the actual application

Elements of Windowing Systems

Two features :

- **Device Independence** → konsep abstract terminal
- **Resource Sharing** → multiple application control

Abstract Terminal :

- makes the programming task easier
- makes portability of application programs possible

Device Driver (translation program) :

- needs to be written for a particular hardware device and then any application program can access it.

Contoh Abstract Terminal :

- **Pixels**

- **Graphical Kernel System (GKS)**

- **Programmer's Hierarchical Interface to Graphics (PHIGS)**

- **PostScript**

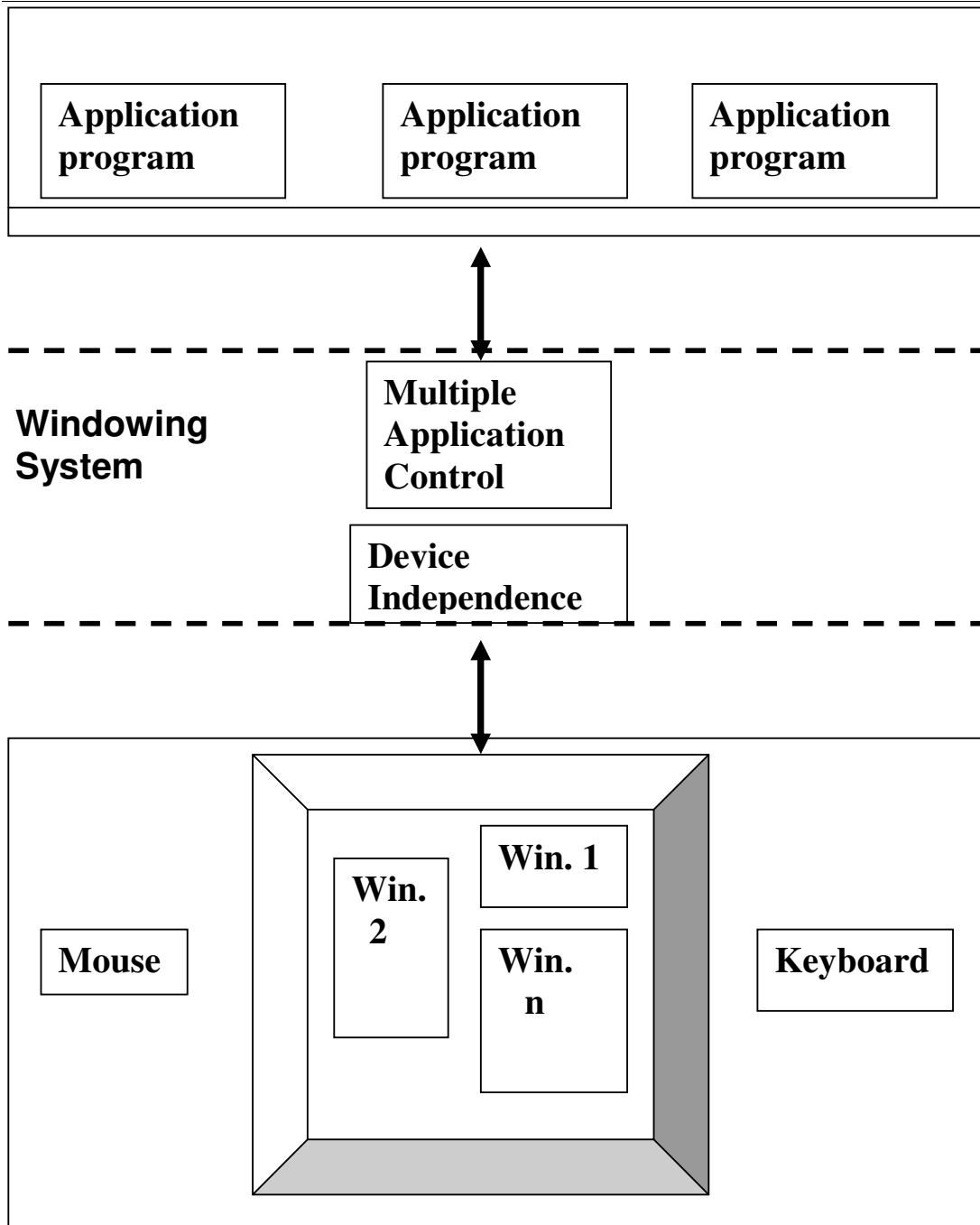


Fig. 01. The Roles of Windowing System

Architectures of Windowing Systems

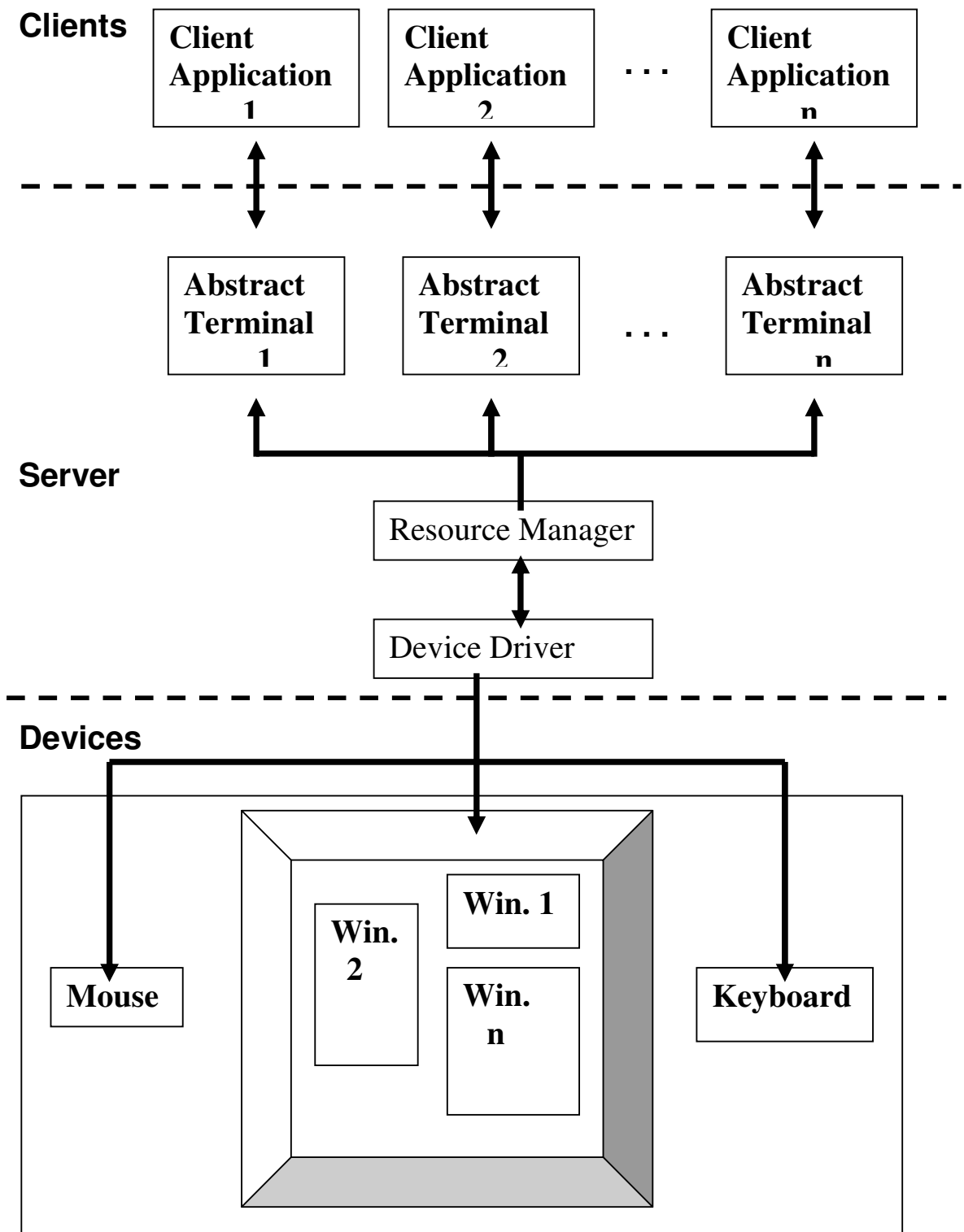


Fig. 02. The Client Server Architecture

Programming The Application

- Programming Paradigm :
 - ◆ Read-Evaluation Loop
 - ◆ Notification Based

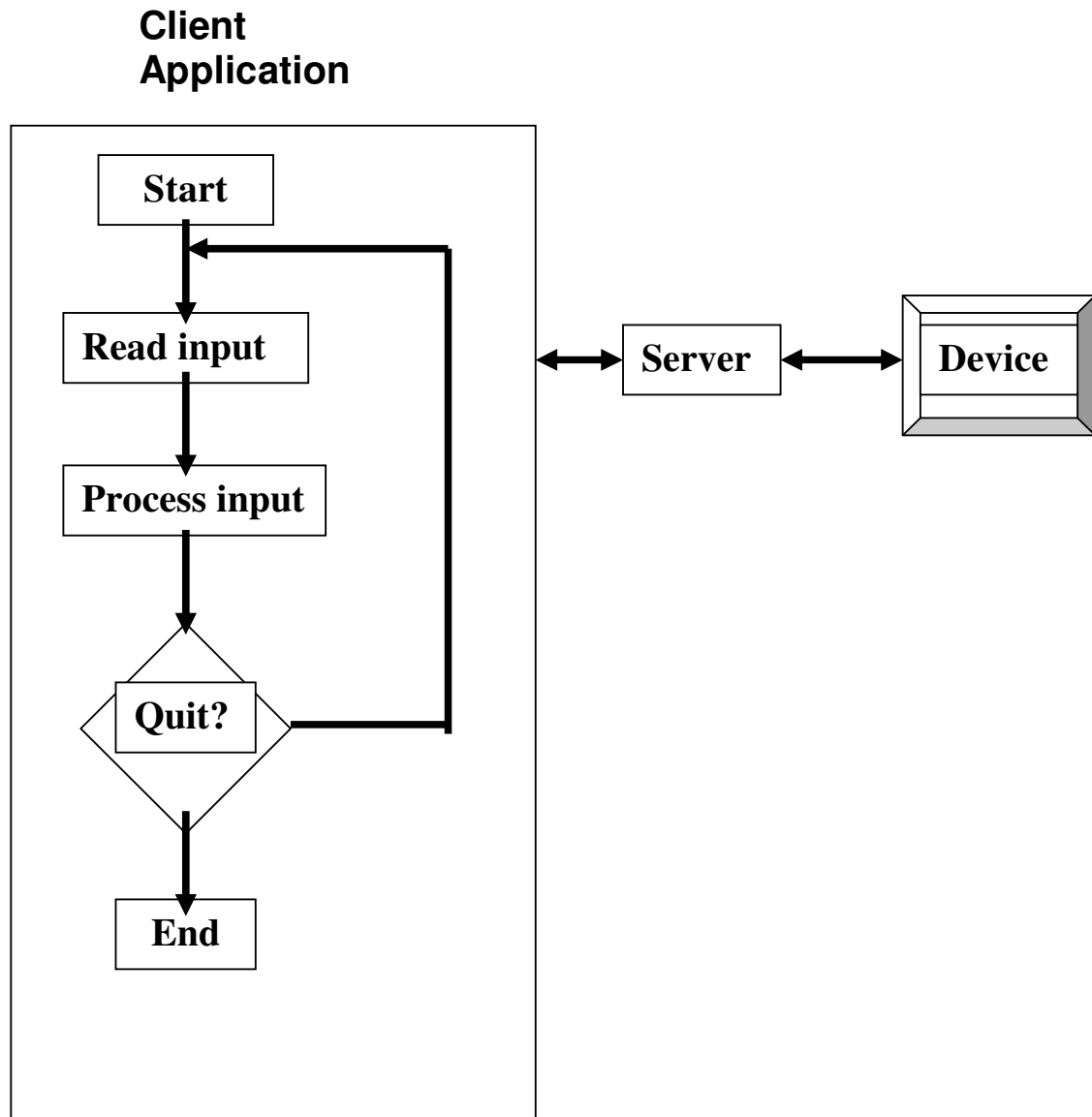


Fig. 03. The Read-Evaluation Loop Paradigm

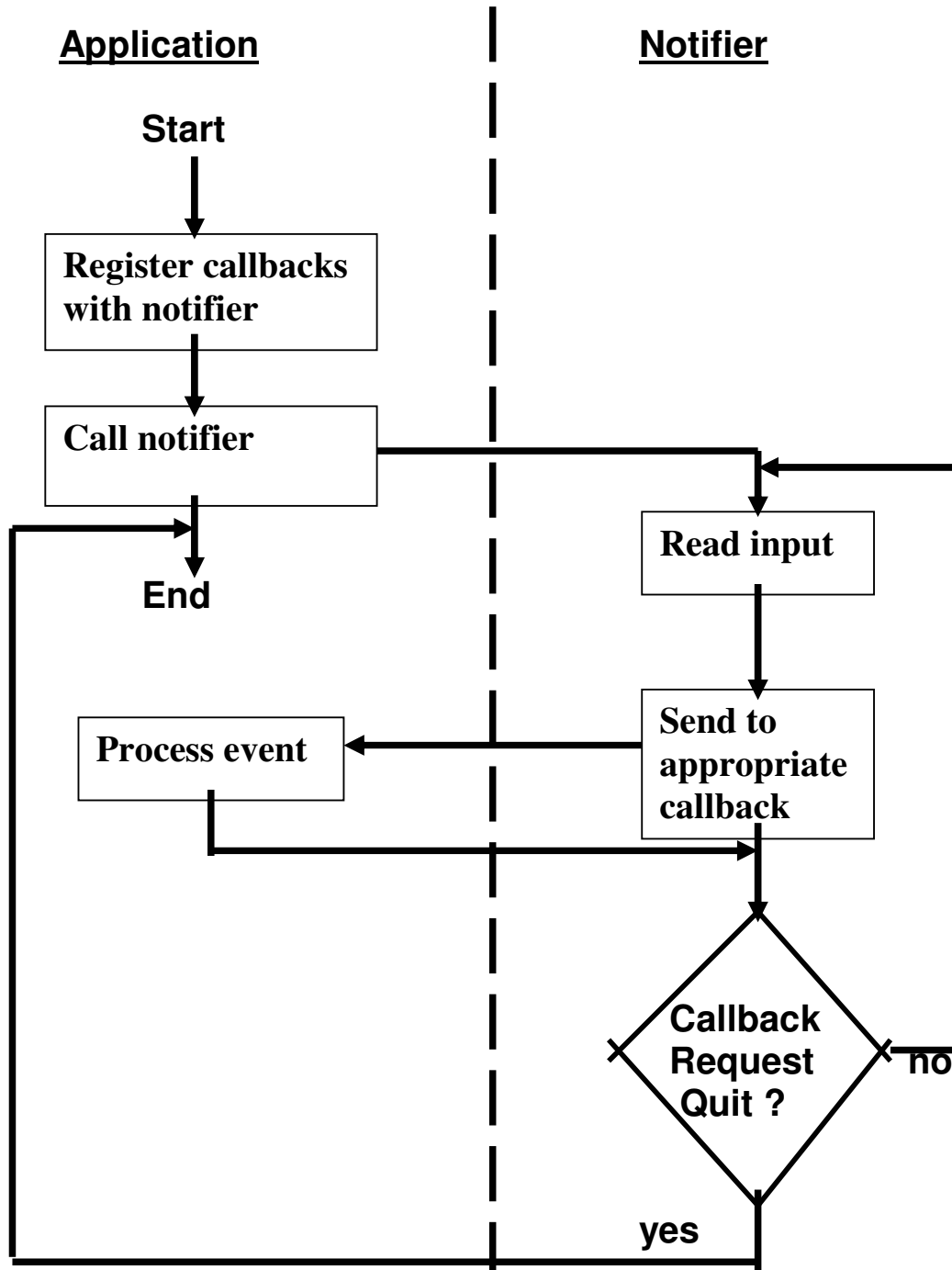


Fig. 04. The Notification Based Programming Paradigm

User Interface Management Systems (UIMS)

The main concerns of a UIMS:

- A conceptual architecture for the structure of an interactive system which concentrates on a separation between application semantics and presentation
- Techniques for implementing a separated application and presentation
- Support techniques for managing, implementing and evaluating a run time interaction environment

The Logical Components of a UIMS :

- Presentation
- Dialogue control
- Application interface

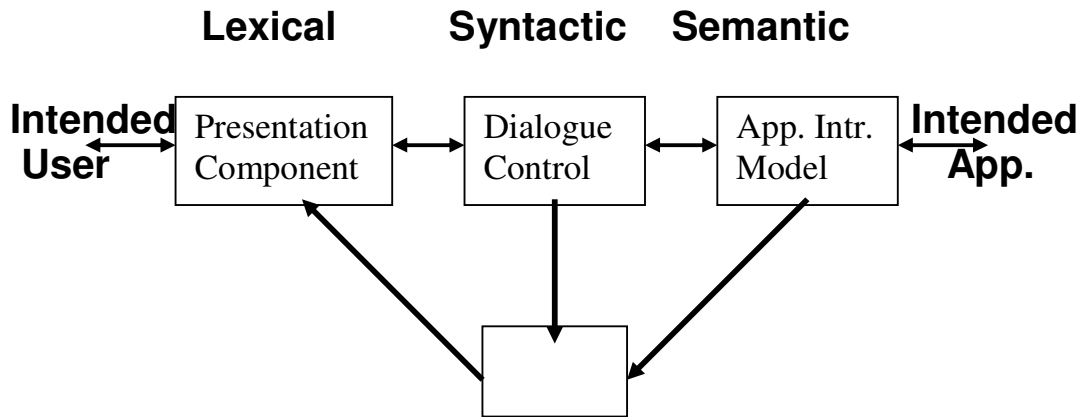


Fig. 05. The Seeheim model of the logical components of a UIMS

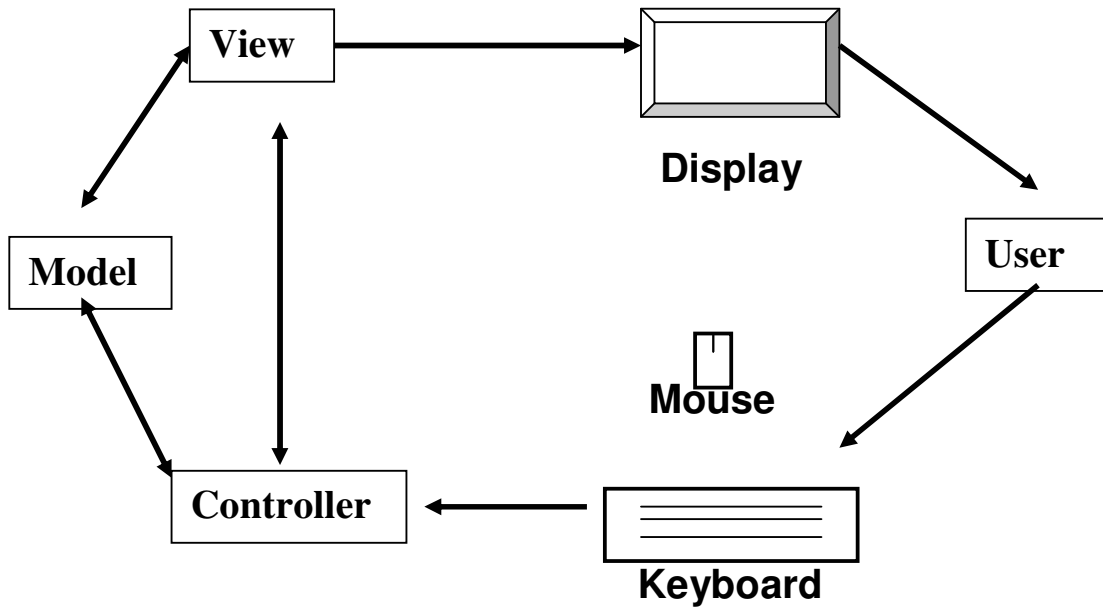


Fig. 06. The Model-View-Controller triad in Smalltalk

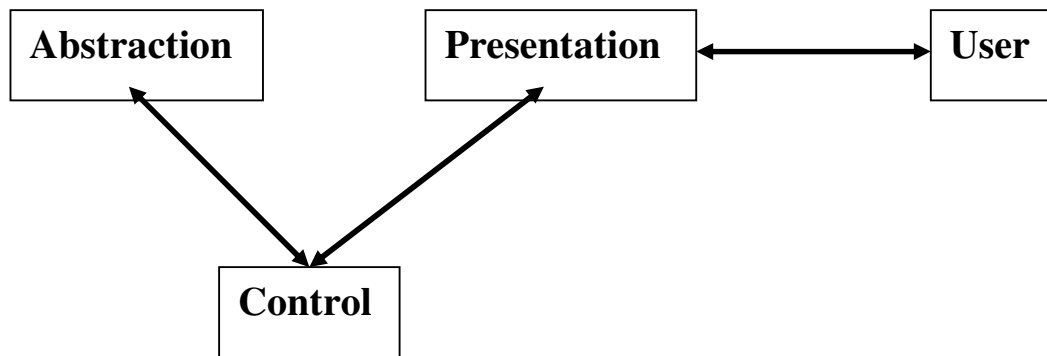


Fig. 07. The Presentation-Abstraction-Control model of Coutaz