Guinard Dominique
dominique.guinard@unifr.ch

De Almeida Pedro
pedro.dealmeida@unifr.ch

Ritz Martin Eric
martin.ritz@unifr.ch

MultiModal Interfaces (MMI):

The Service Counter System Toolkit

Document, Image and Voice Analysis
Research Group (DIVA)

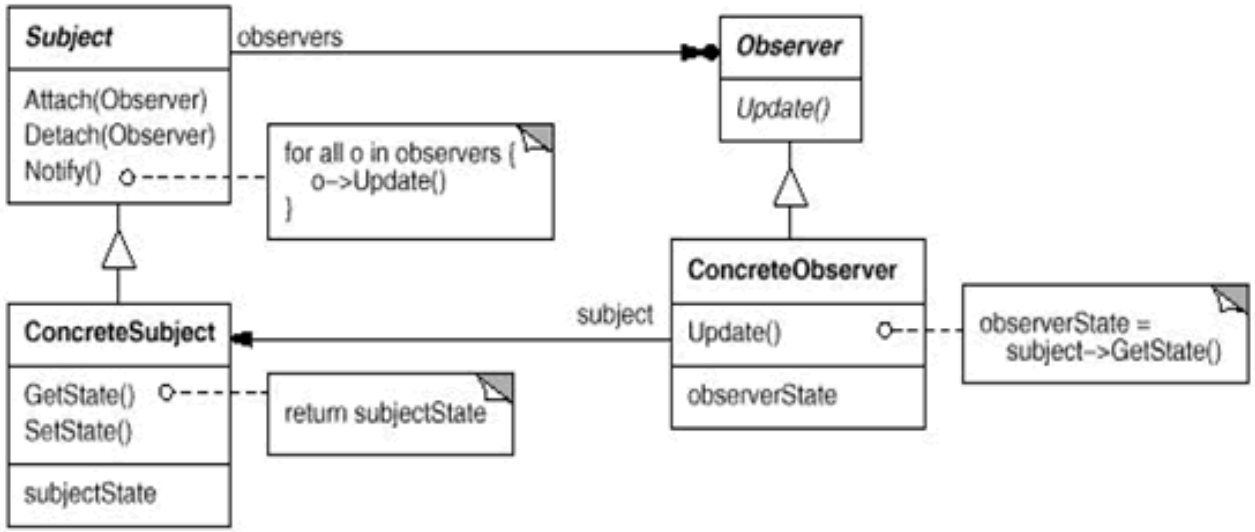
Department of Informatics (DIUF),
Faculty of Science
University of Fribourg, Switzerland

What is the SCS?

- Service Counter System, SCS:

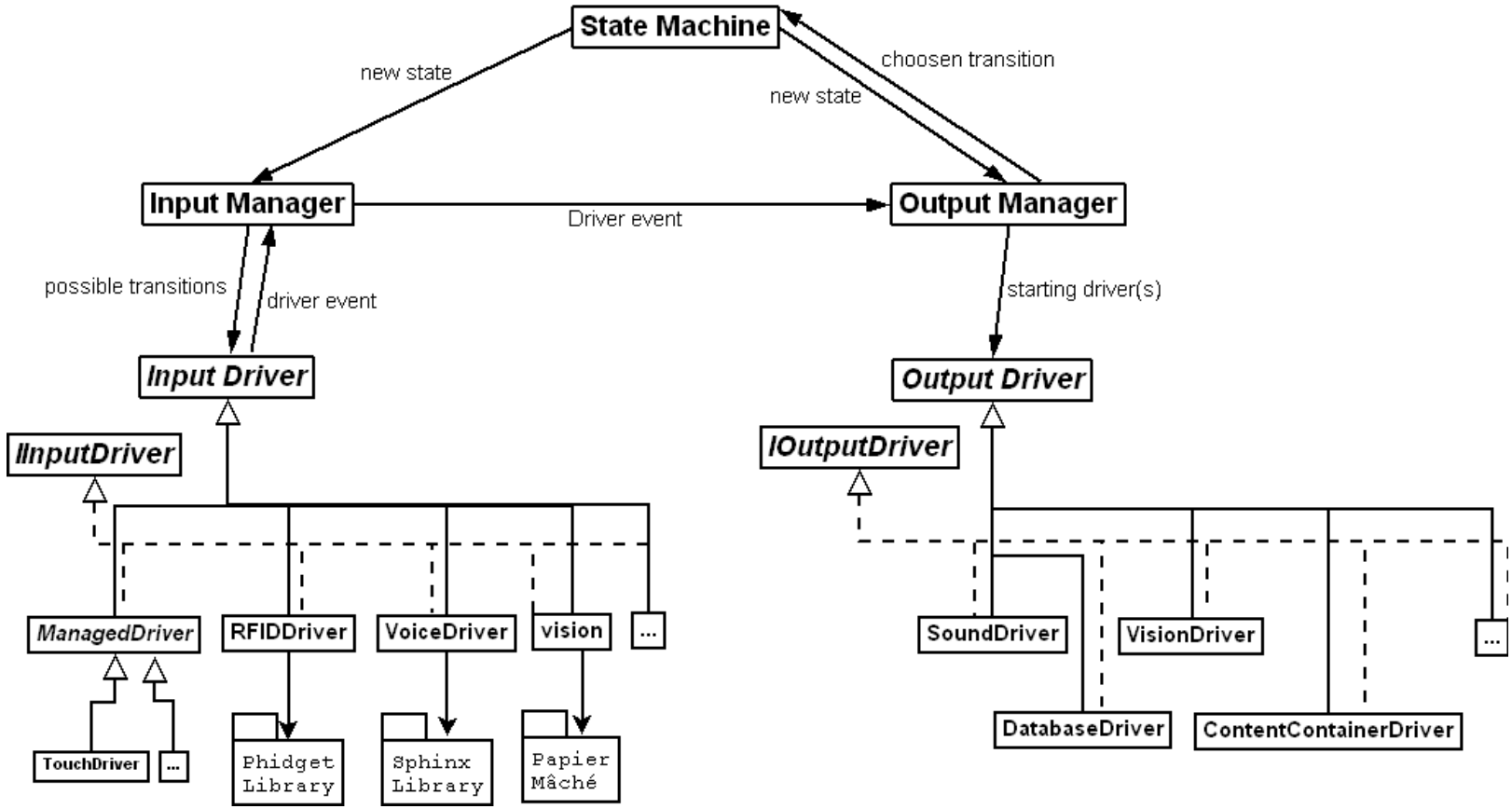
  A toolkit for building states centric user interfaces providing a seamless integration of concurrent input and output modalities.

Observer Pattern Structure



- from E. Gamma, R. Helm, R. Johnson, and J. Vlissides. Design Patterns: Elements of Reusable Object-Oriented Software. Professional Computing Series. (p. 294)

The architecture of the toolkit



Use case

- A multimodal Librarian Service Counter:
  - Main idea:
    - In a library there are some administrative works which are repeated each day for many times e.g.
      - lending and taking back of existing books
      - recording new books into the book catalog
    - The multimodal Librarian Service Counter is a hard- and software-based user interface, which implements these tasks.

…so

…it’s time to say good bye !

Components


ROTATION SENSOR
300 DEGREES
P/N 1109
SLIDER 60mm
P/N 1110
Touch Sensor
P/N 1110
Touch Sensor

Modalities

- Vision:
  - Input:
    - Take a photo of a book via video camera
  - Output:
    - Ten LEDs to indicate the user which input possibilities are actually enabled
- Touch:
  - Input:
    - Touching Sensors for OK and Chancel operations
    - Panic Button for stopping all activities
    - A Rotation Sensor, two slider sensors and a mini-joystick for choosing different options
    - A switch for turn on/off the hardware

Modalities

- Auditory:
  - Input:
    - Speech recognition allowing the user to control the system via voice
  - Output:
    - Speech output to inform the user about current state
- Kinetic:
  - Input:
    - Replacement of a book in one of two predefined RFID areas
    - Trace user movements using the video camera and Papier Mâché
  - Output:
    - Two Servo Motors to calibrate the camera

Demonstration