Network-Based Multimedia: Experiences from the CMIF Project

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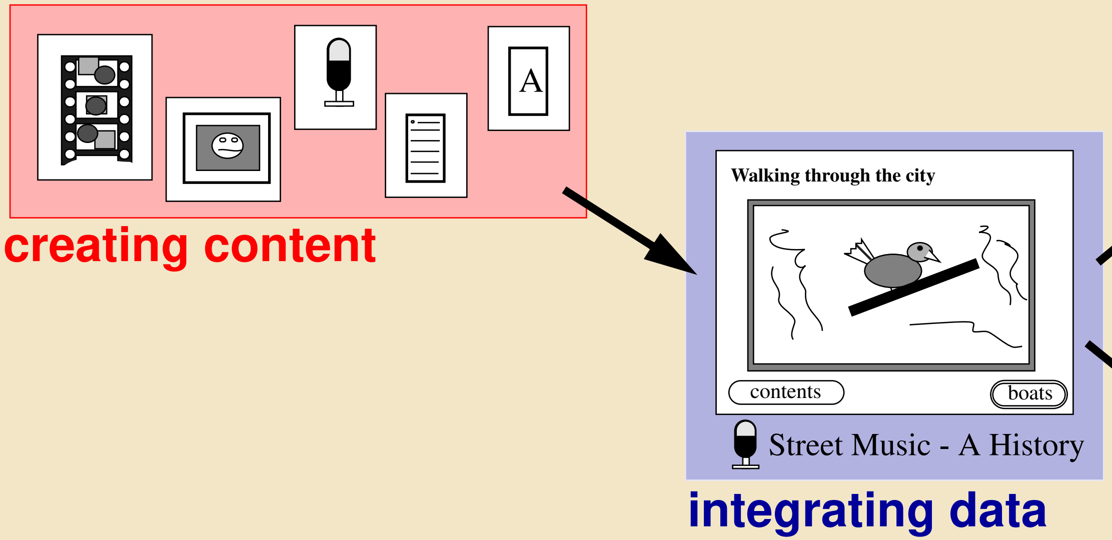
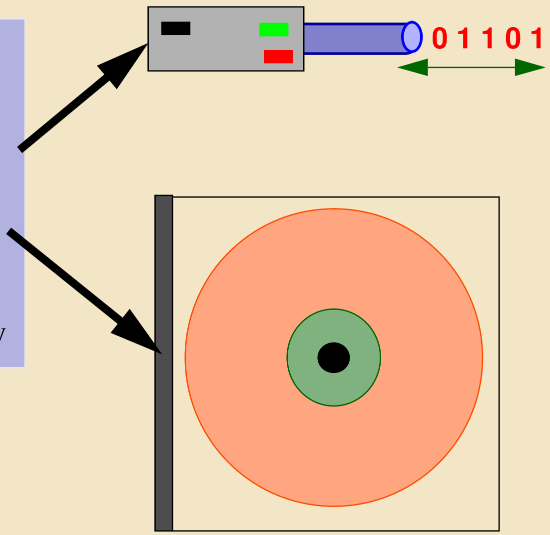
Presentation Outline:

- Authoring in the Large
- Overview of the CMIF Project
- Issues in Networked Multimedia
- Lessons for a Real-Time Web

Authoring in the Large





packaging&
distribution

Challenges:

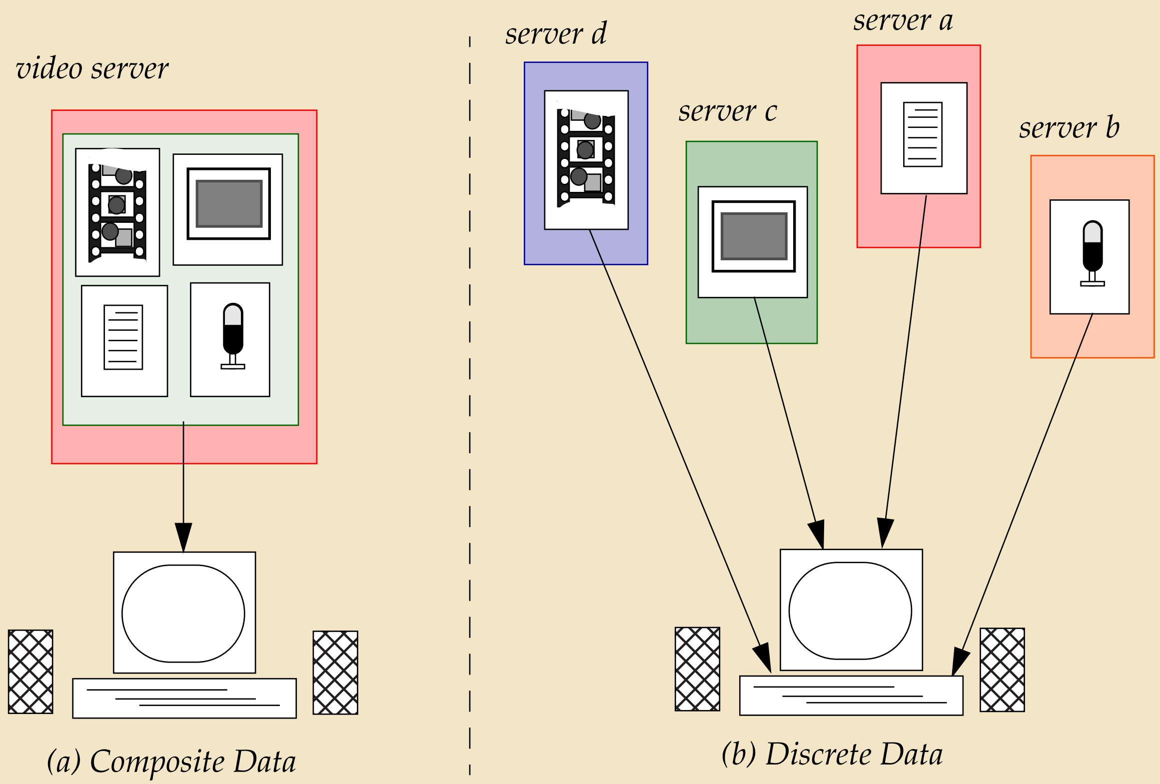
- creating content
- laying out the presentation
- synchronizing components
- delivering the production

Overview of the CMIF Project

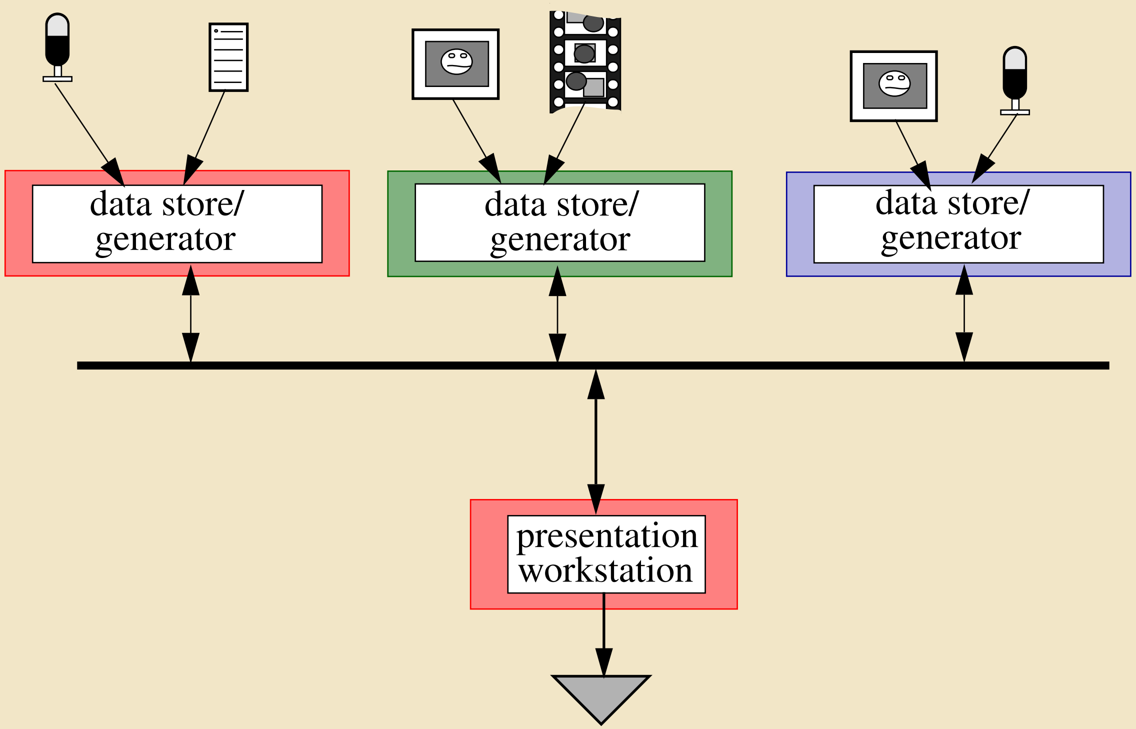
CWI's *CMIFed* and the *Amsterdam Hypermedia Model*

- investigates the use of *structured authoring* techniques:
  - separates structure from content in presentation
  - explicit specification of timing relationships among items
  - channel-based layout of media items
- provides support for *adaptive multimedia documents*
  - document as collection of independent information events
  - explicit synchronization of events relative to content
  - expression in alternative representations
- used in variety of environments:
  - as basis for CHAMELEON (EU/ESPRIT-IV)
  - in STEM (EU/TELEMATICS)
  - for ATM-based Electronic Commerce in SEMPER (EU/ACTS)

Packing Time-Sensitive Data



Problems in Networked Multimedia



Authoring/Editing Issues

Scope: Networked Environment

- heterogeneous presentation environments
- non-deterministic delay models for delivery
- multi-sourced data must be explicitly synchronized

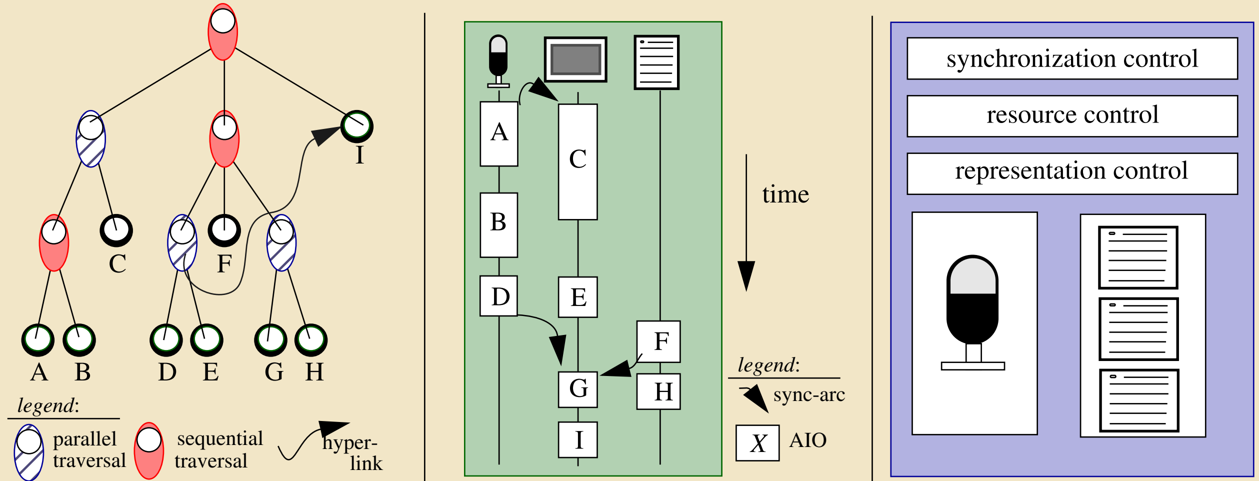
Authoring Models

- specification-based
- separate *local* and *global* resource control
- separate *information* and *information representation*

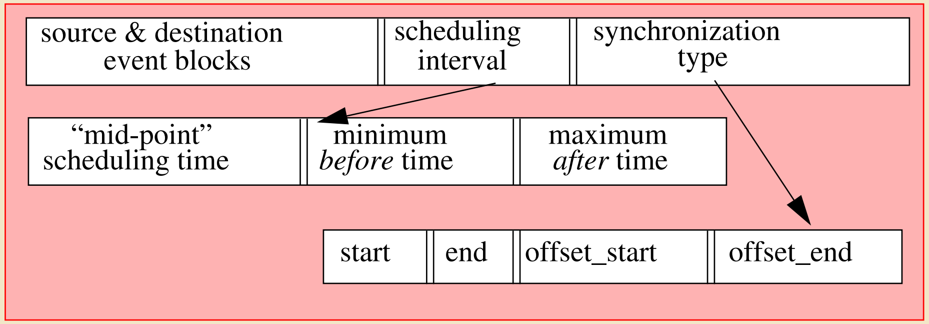
Primary Applications

- electronic newspapers
- electronic commerce

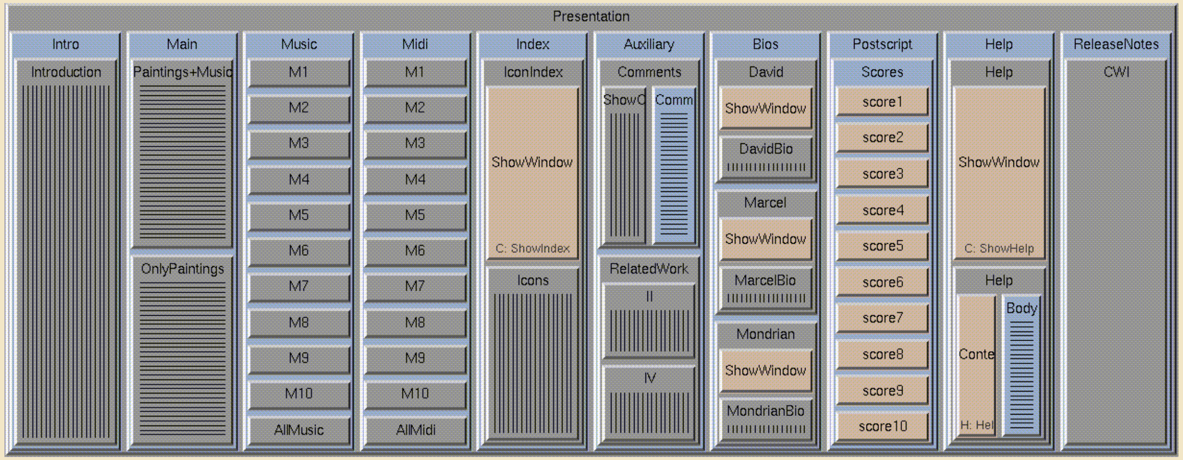
THE CMIF Document Model



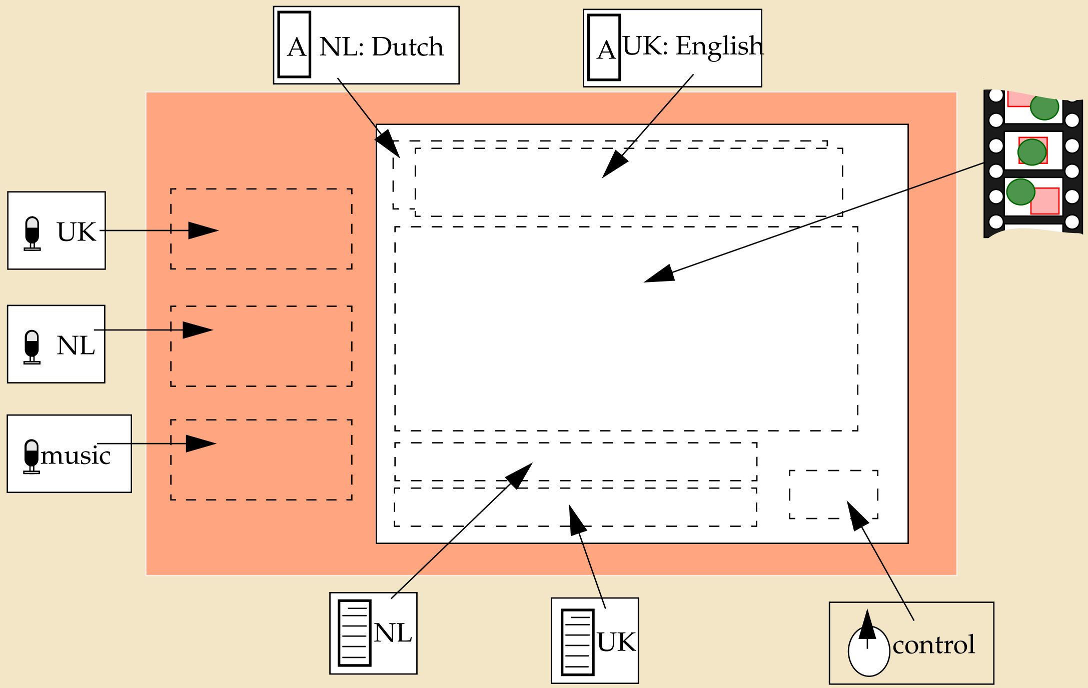
(a) (b) (c)



The Hierarchy View



The Channel Architecture for Networked MM



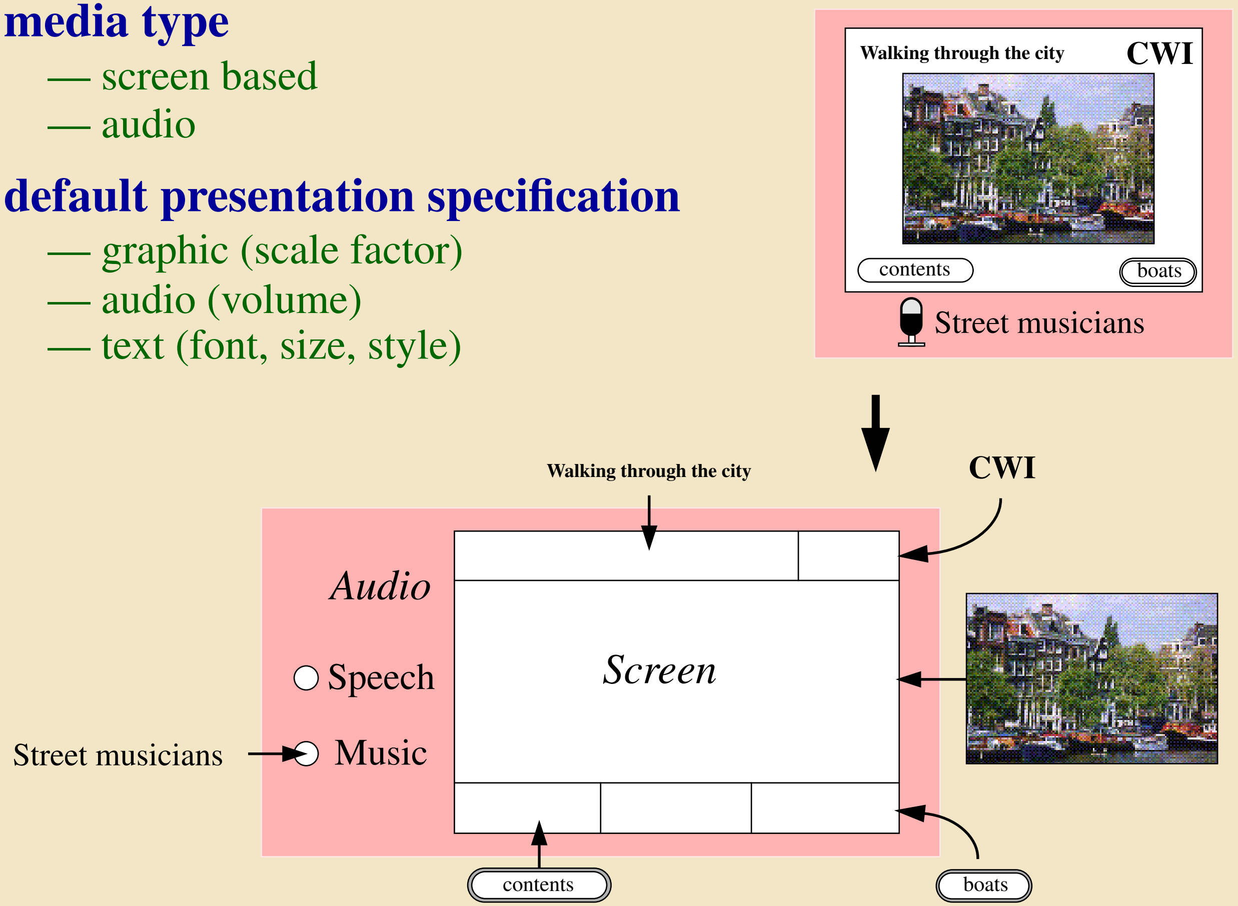
Channel Application

media type

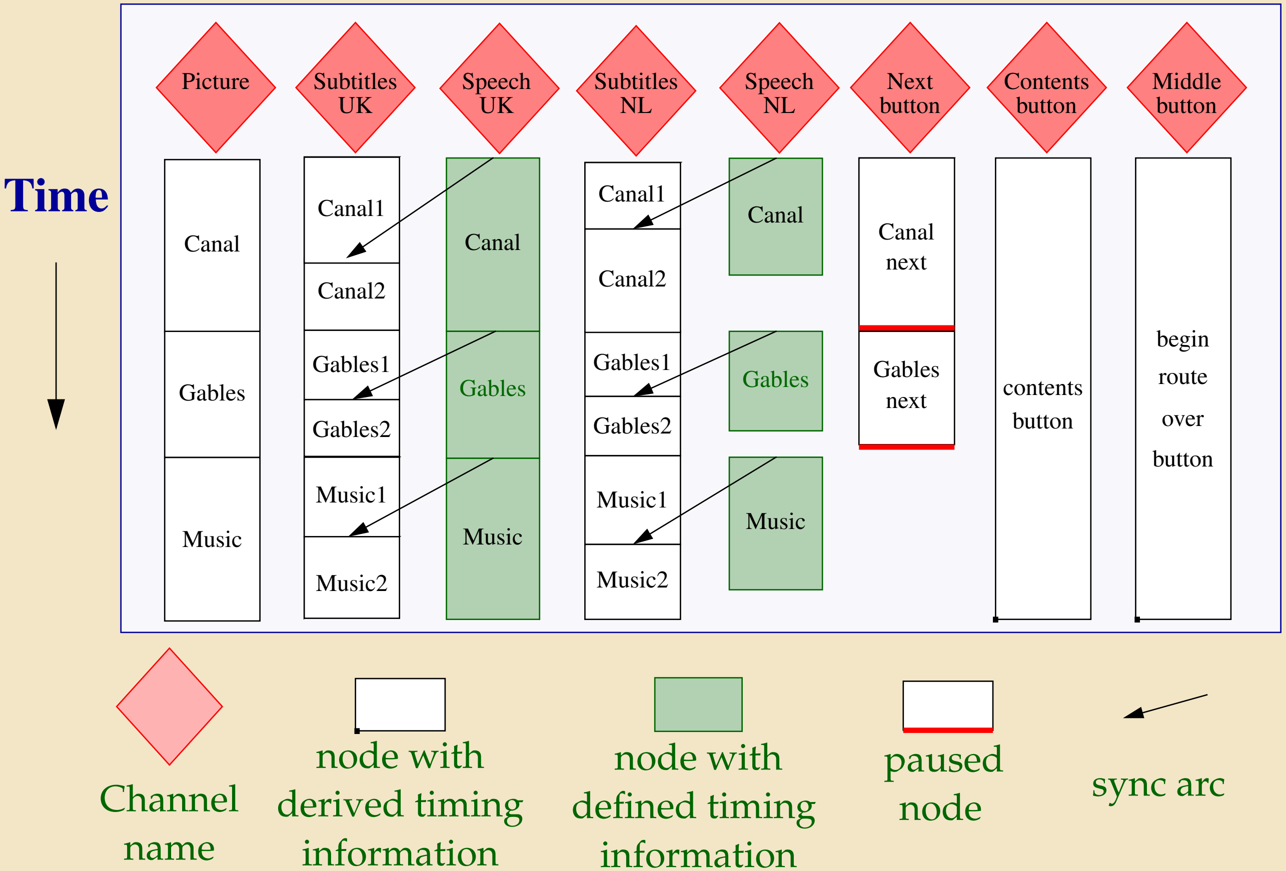
— screen based
— audio

default presentation specification

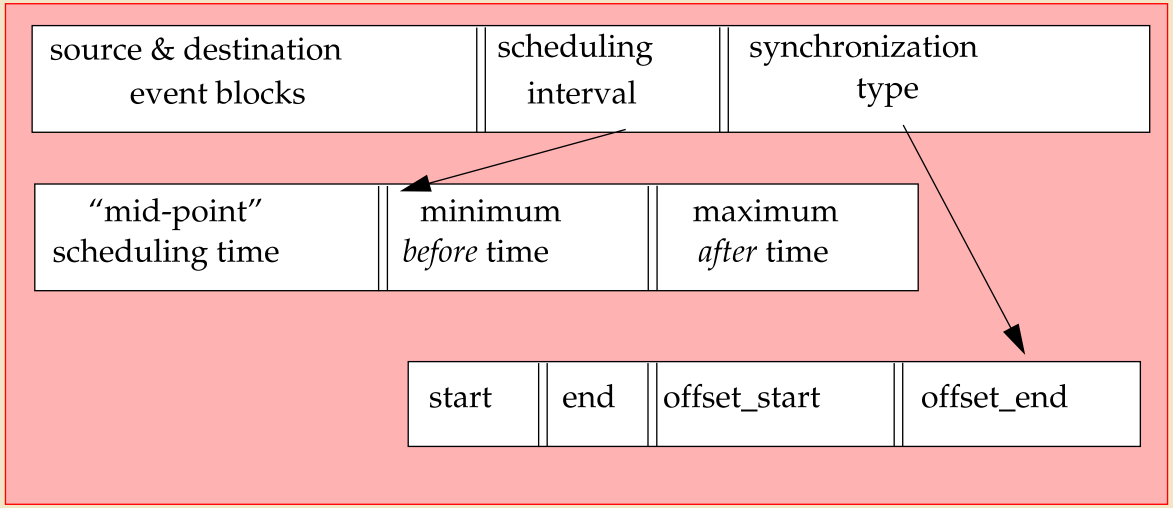
— graphic (scale factor)
— audio (volume)
— text (font, size, style)



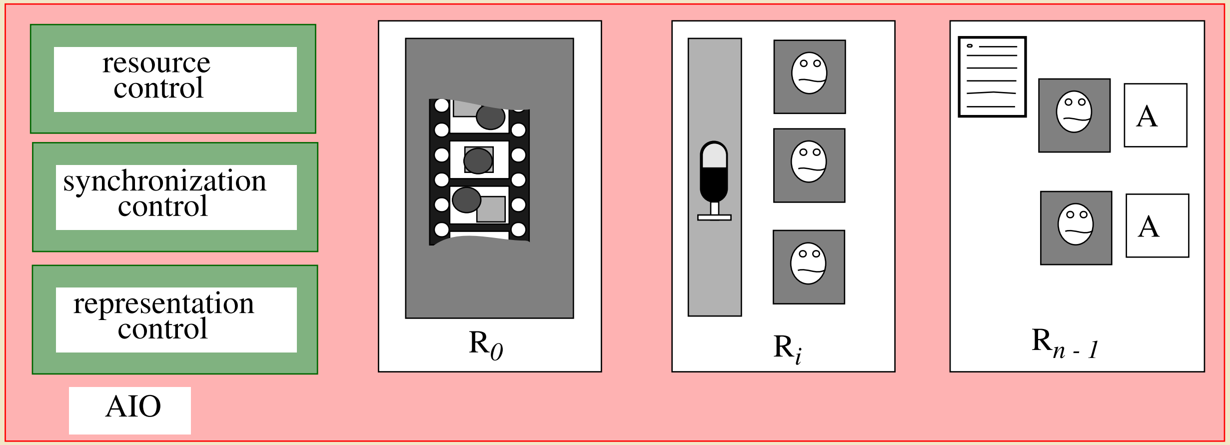
Using Channels in the Editor



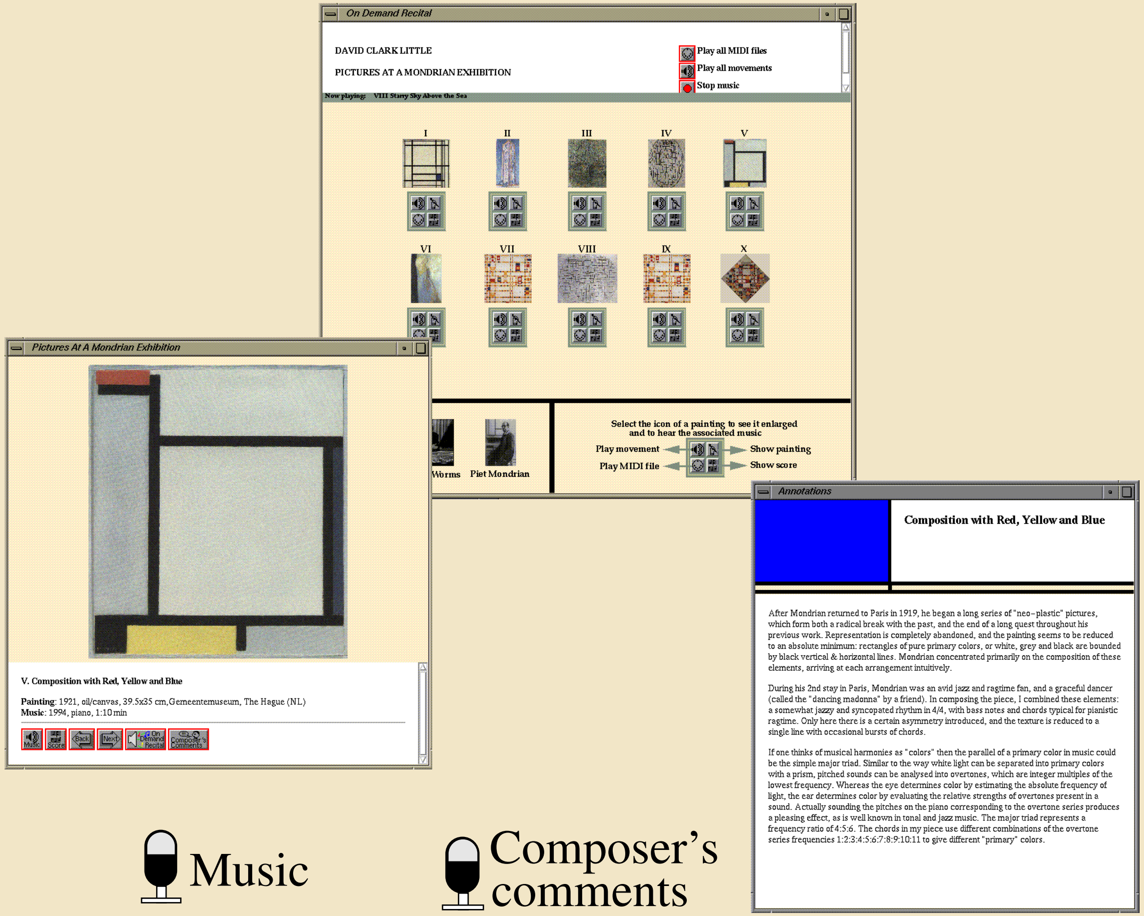
Synchronization Arcs



Controlling Data Object Presentation: The AIO



An Application Example



Music

Composer's comments

Summary: Lessons Learned

Whether you use CMIF or not, we feel the following holds:

- Separate the description of the interactions in the application from the application itself;
- Make synchronization among data streams explicit, not implicit;
- Controlling a presentation is not only an end-to-end concern;
- Have the author specify rational alternative based on content, rather than having the system make choice based on data format;
- Provide statistical support for (pre)fetching links.