CMIF:

A Structure for Transportable, Dynamic Multimedia Documents

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Presentation Outline

- Multimedia: what is it (and why is it interesting)?
- CMIF: CWI’s Multimedia Interchange Format
- Hyperstructures & CMIF: Open Questions

What is Multimedia?

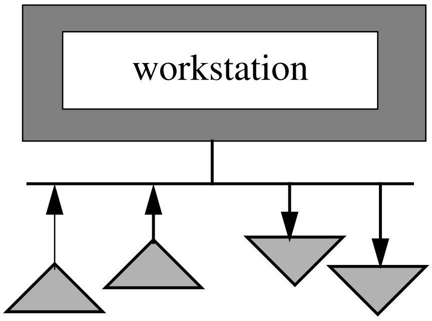
- Present:

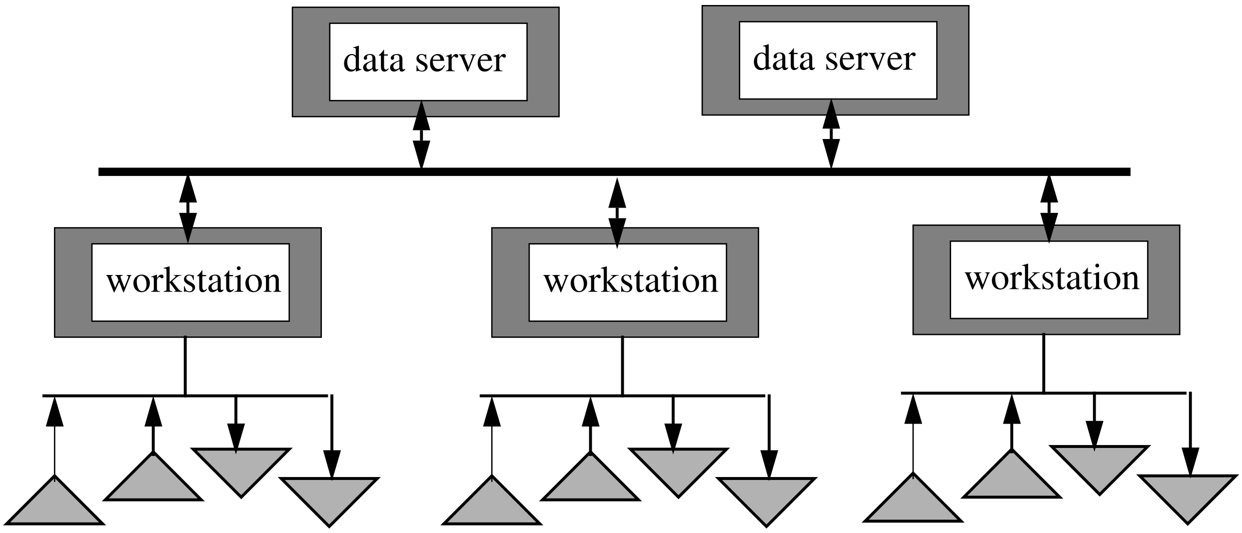
  mul•ti•me•di•a <*buzzword; adj*>: a property of applications software that allows for the mixed use of several (chiefly output) media—such as sound, video, text, image and graphic data—in a manner that makes the unsuspecting user think that something unusual is happening on an otherwise conventional computing system.
  Examples: multimedia mail; multimedia documents; multimedia research
  See also: Clothes, Emperor's New.

- Future:

  mul•ti•me•di•a <*adj*>: a generalized ability of programs and architectures to define, manipulate and present all forms of temporal and spatial information.
  Examples: multimedia programs; multimedia computers
  See also: Data, Universal.

Distributed Multimedia



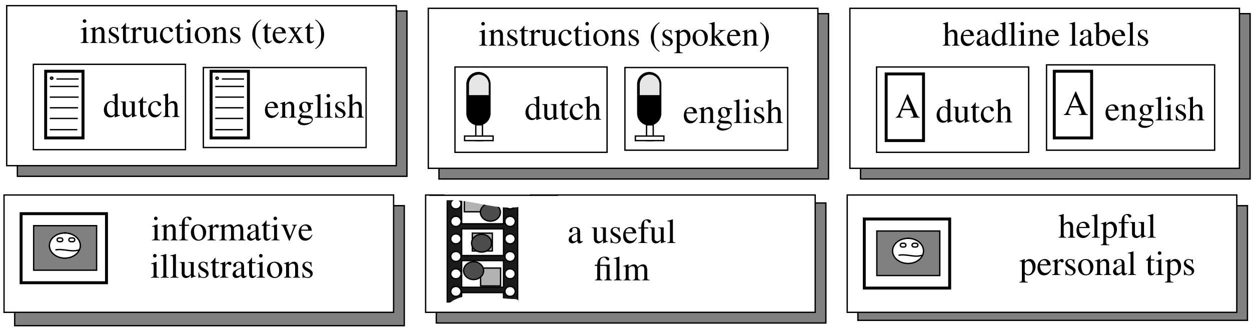


General Areas of Interest

- Document Structures for Transportable Presentations
  - — document object model
    - inter-object synchronization
    - object presentation model
- User Interaction Models
  - — presentation tailoring
    - component placement
  - — presentation control
    - component selection

A Typical Multimedia Problem: *Setting Coffee*

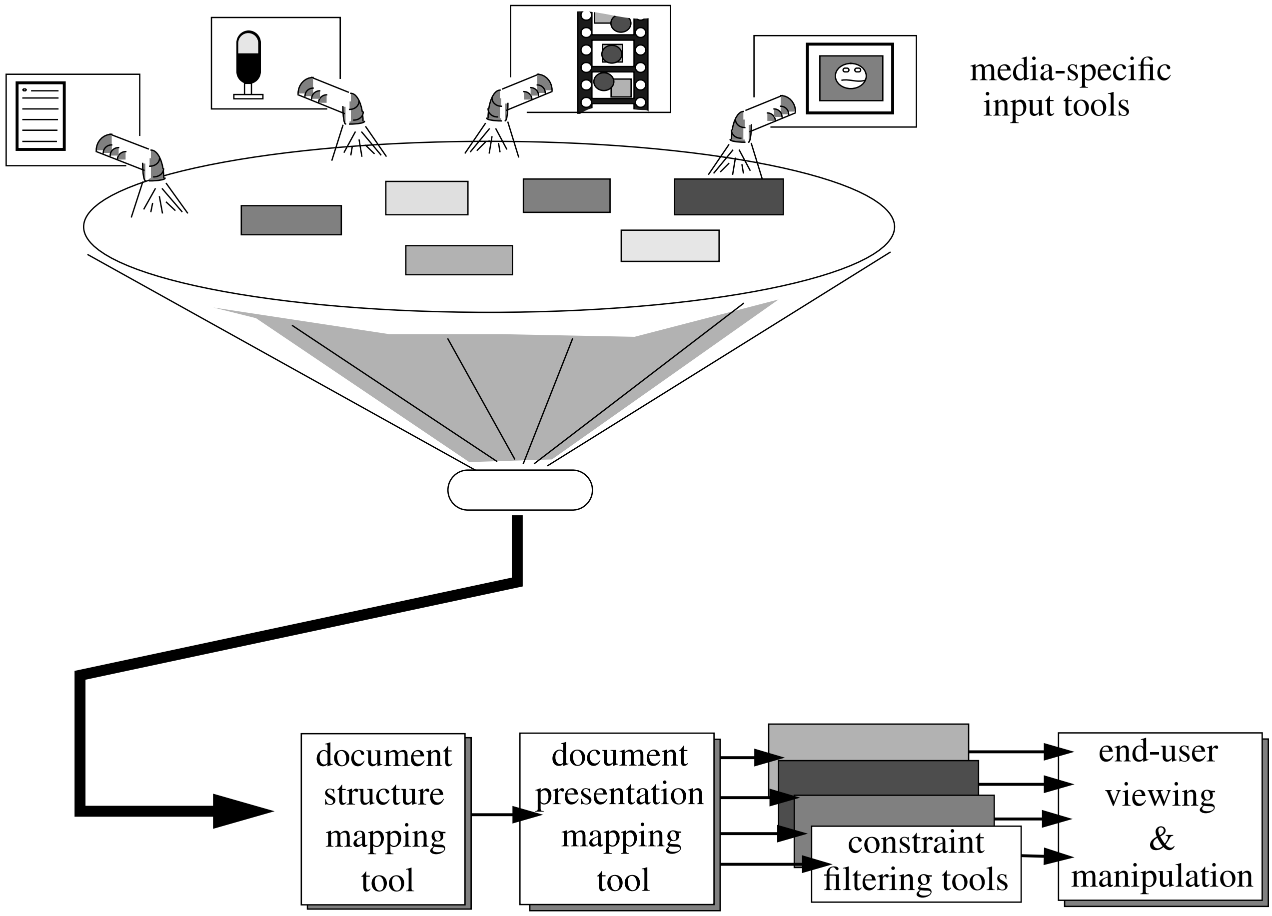
- Components:



- Problems (presentation):
  - — creating data
  - — synchronizing components
  - — laying out a presentation
  - — starting a presentation
  - — controlling a presentation

- Problems (support):
  - — representing data
  - — fetching components
  - — resource allocation
  - — data/control modelling
  - — interactive feedback

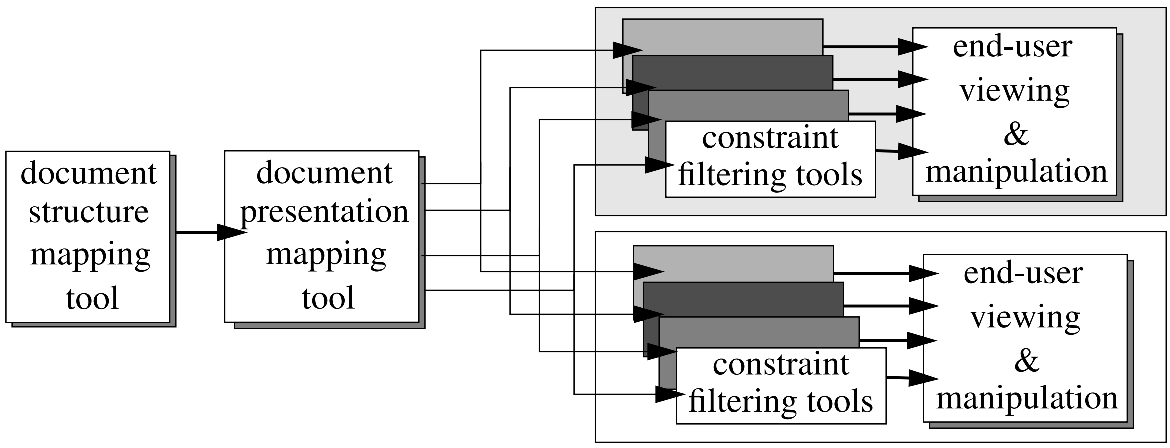
The CWI Multimedia Pipeline



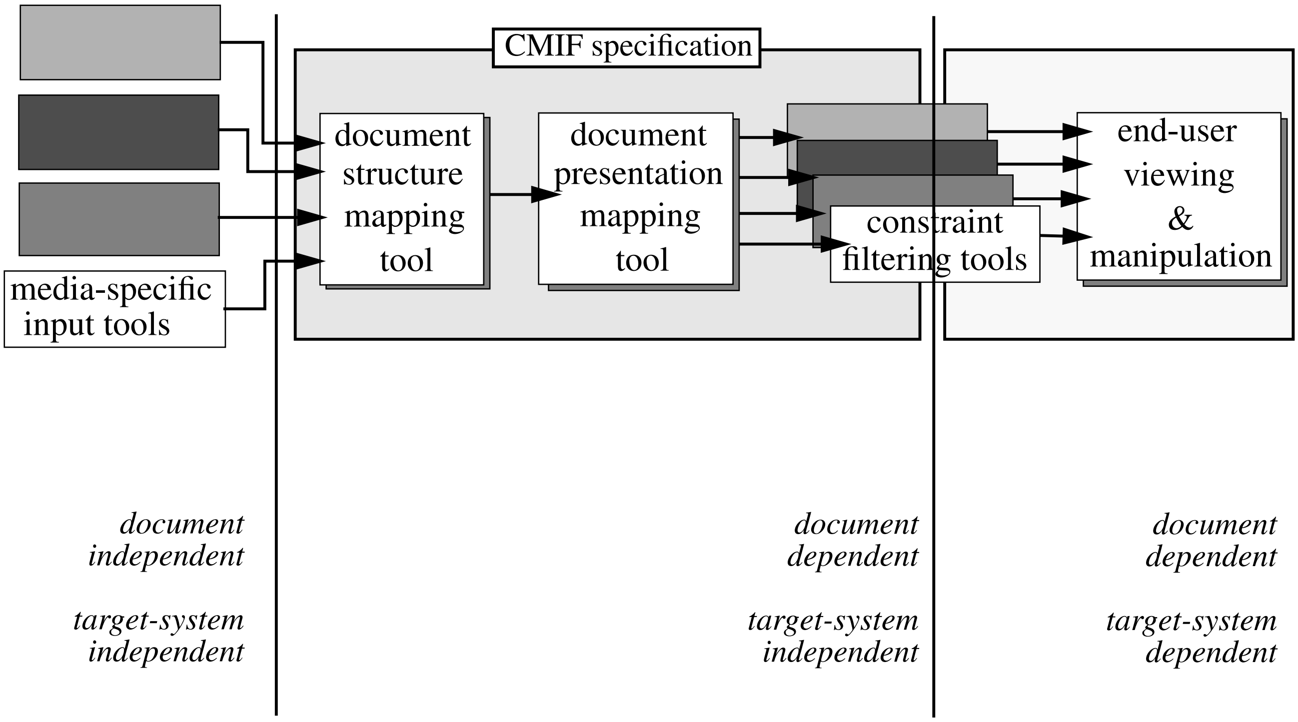
CMIF: Transportable Multimedia

- Current Structure Shortcomings:
  - — FAX syndrome for audio/video/text data
  - — centralized source/sink model
  - — lowest-common-platform data modelling

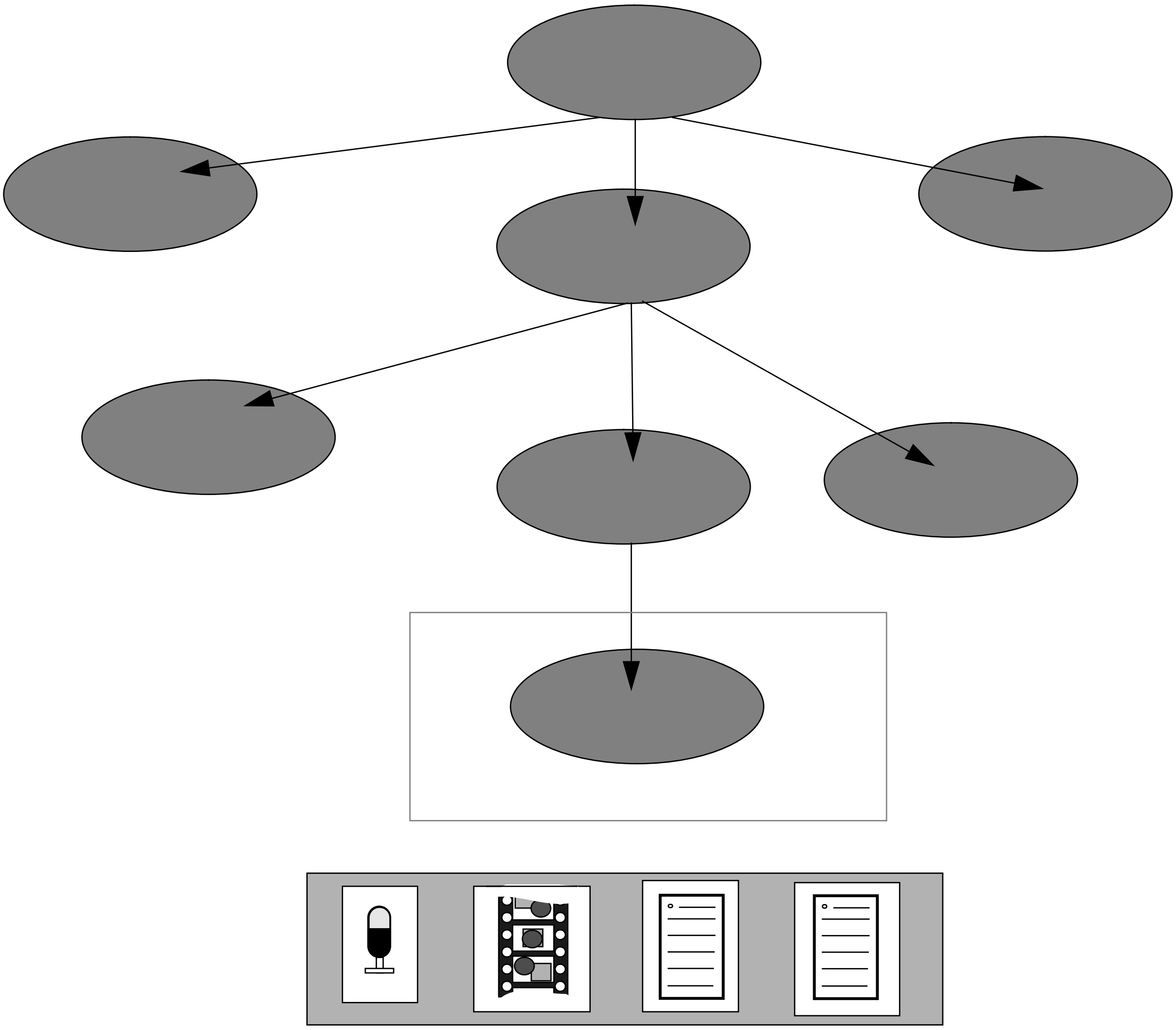
- CMIF Goals:
  - — decouple *data* and *structure*
  - — define *transportable* documents
  - — support *heterogeneous environments*
  - — define flexible *synchronization* requirements



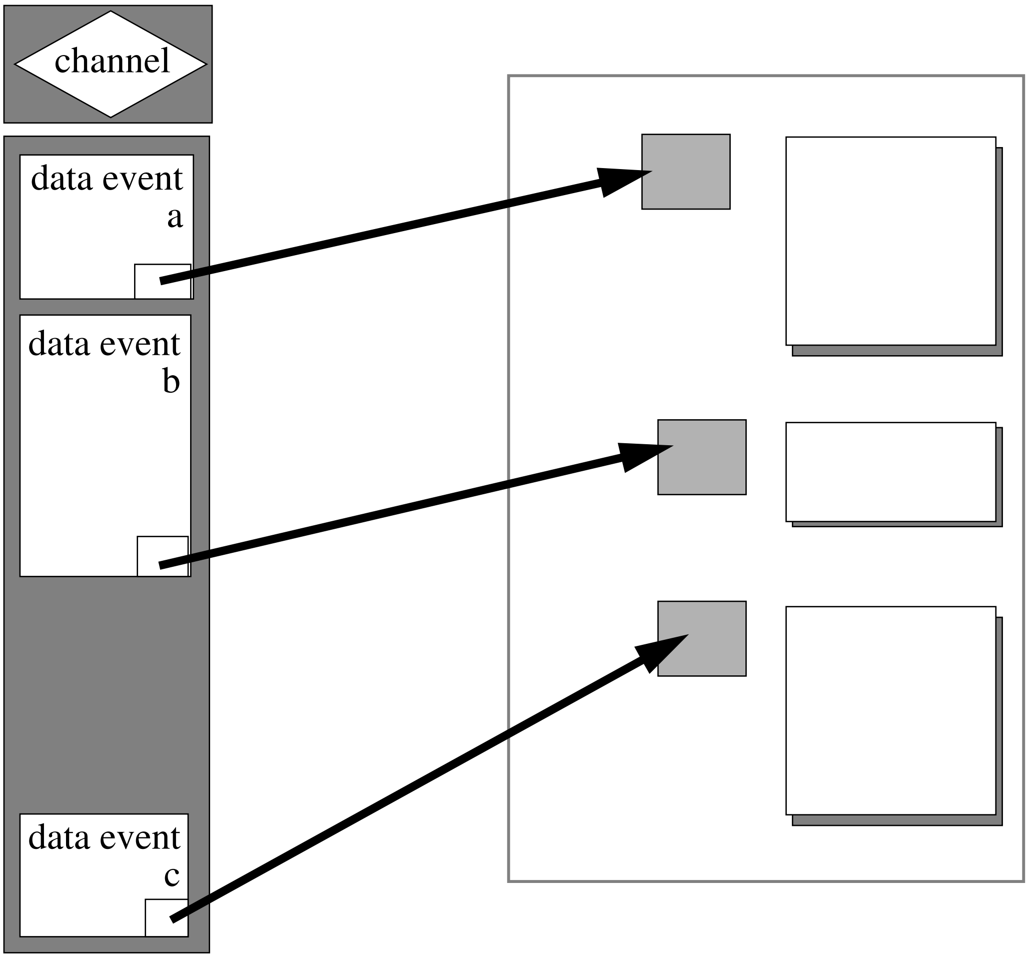
CMIF and the Multimedia Pipeline



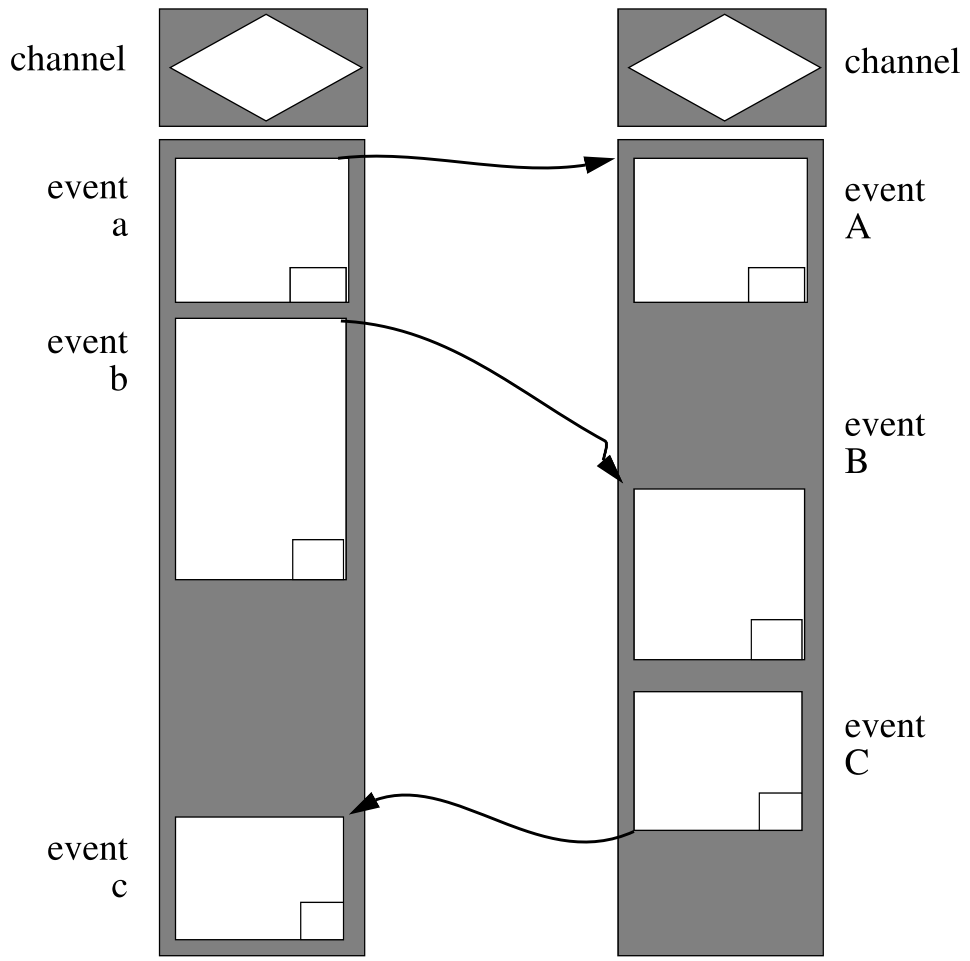
CMIF Information Tree



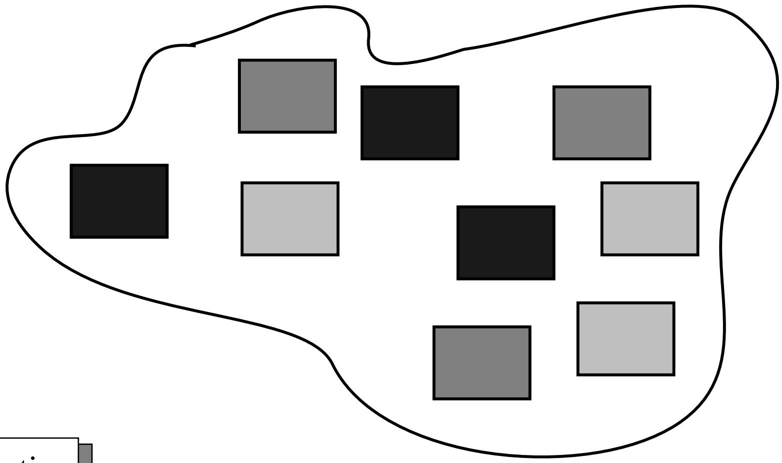
Information Modelling in CMIF



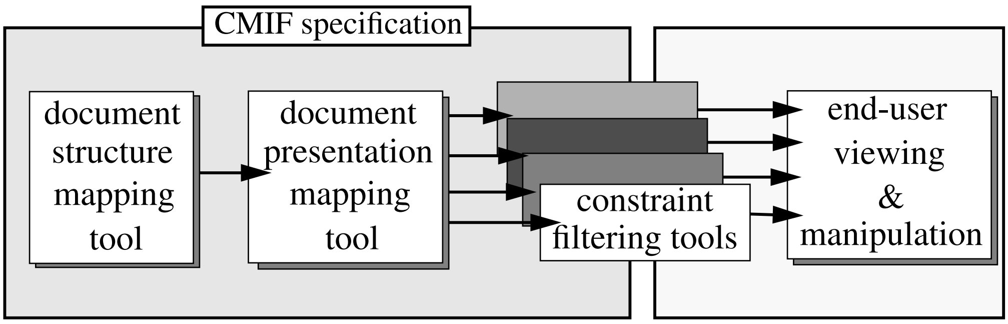
Synchronization in CMIF



Hyper-Information and CMIF



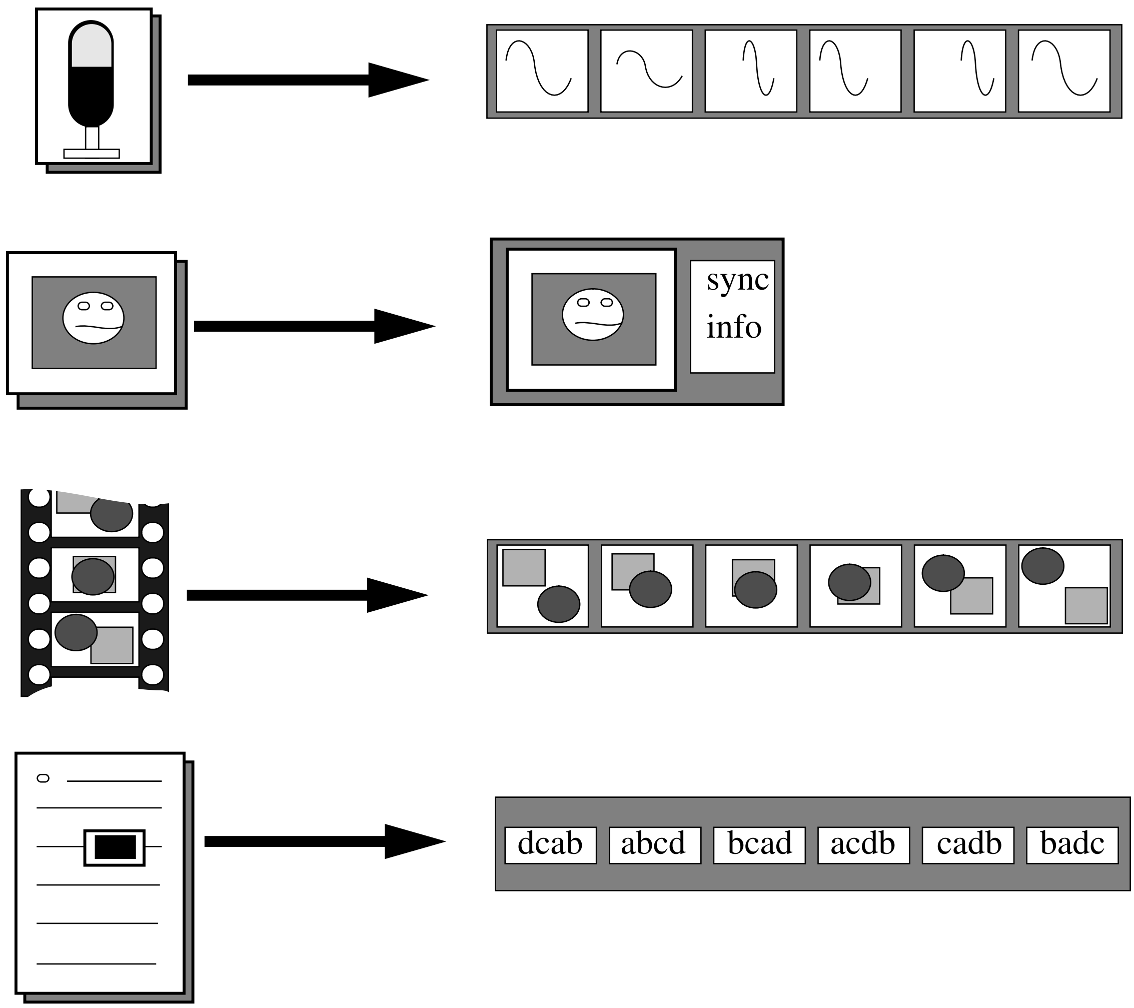
element selection tool



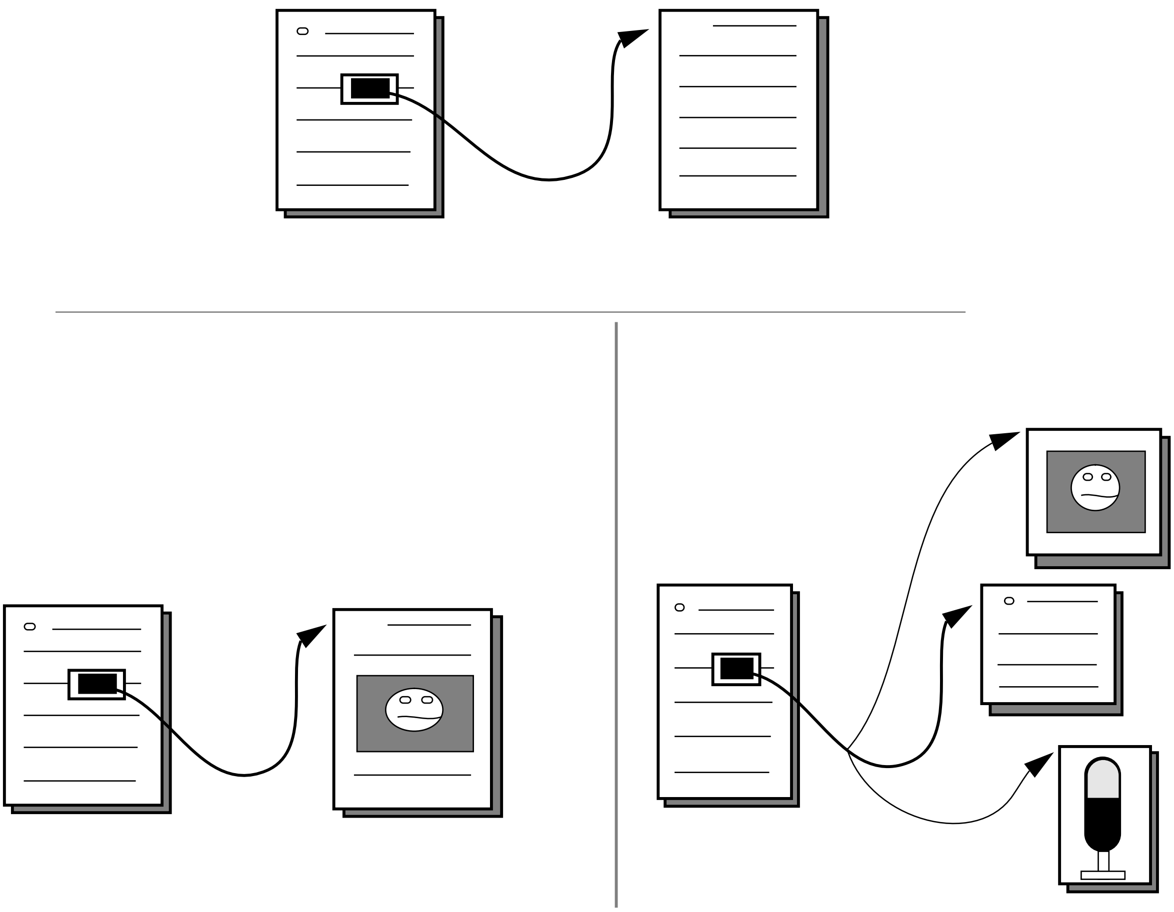
Open Issues

- Modelling time-based data
- Creating/managing ‘multimedia hyperlinks’?
- Dynamic selection

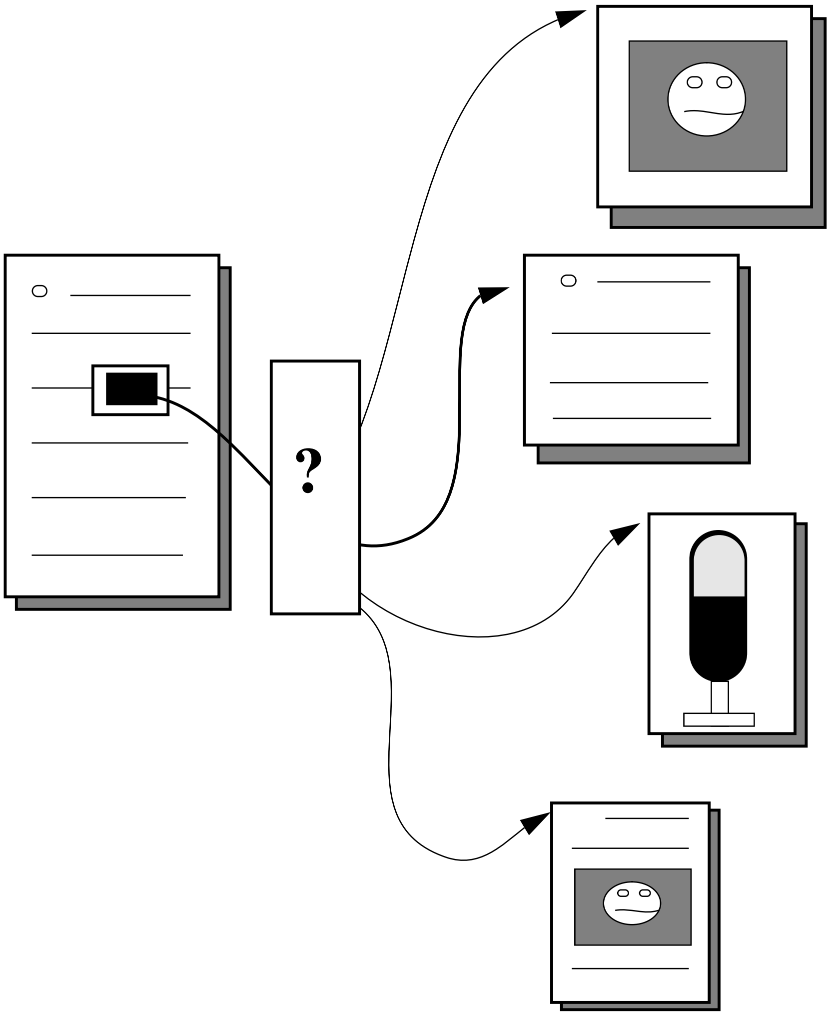
Modelling Time-Based Data



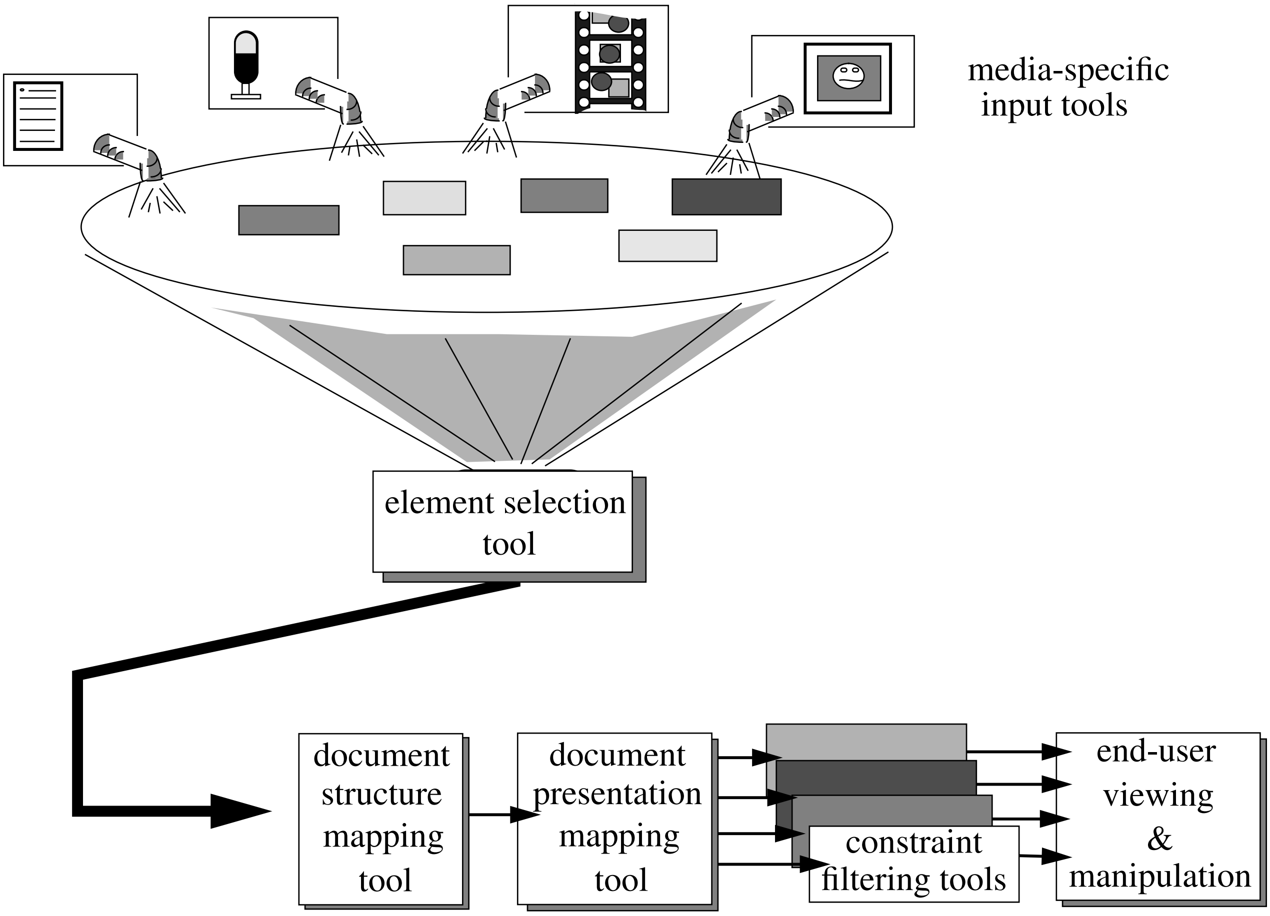
Modelling 'Multimedia Hyperlinks'



Dynamic Data Selection



Dynamic Feedback Control



Summary

- Creating nice multimedia documents for a one platform is hard

- Creating one multimedia document for multiple platforms is harder

- Adding hyper structure information is very hard (but, luckily, very interesting!)