Advene project

Hypervideo and Annotations on the Web

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MMWeb 2011 – Graz, Sept. 8th

LIRIS – Lyon Research Center for Images and Intelligent Information Systems
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Context

- Audiovisual metadata is essential
- (incomplete) definitions :
  - **(AV) Annotation** : any piece of data linked to an audiovisual fragment
  - **Augmented/annotated video** : video augmented with annotation data
- What for?
  - Search / retrieval
  - Linking
  - Navigation
  - Visualisation

Visualisation

- Variety of visualisation modalities
- Two different goals:
  - Find the most appropriate visualisation for the annotations **for the current task**
  - Do not too tightly bind the annotations and their visualisations (prevents reusability)

► empower users with the ability to define their own visualisations

Hypervideo

- Term used by Ted Nelson (1960s)
- A definition : *interactive video-centric hypermedia document built upon an audiovisual content augmented with data in a time synchronized way*
- Two dimensions :
  - Hypermedia
  - Video-centered

Hypervideo specificities

- Annotations mandatory to address/augment video content
- Variety of visualisation modalities
- Space/time disorientation more pregnant
- Cognitive load / time pressure
- Rhetorical and aesthetic challenges

Advene principle

Structure schema

- Shot
- Episode
- Document
- Panel
- Related shot

Annotation structure

Annotations

shot 1 | shot 2 | shot 3 | shot 4 | shot 5 | shot 6

title: 'Meeting' | title: 'Mission'

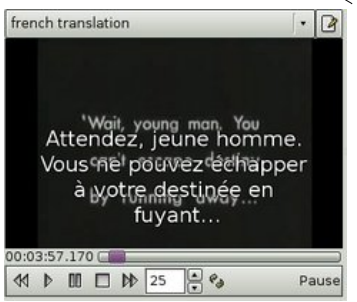
document 1.pdf

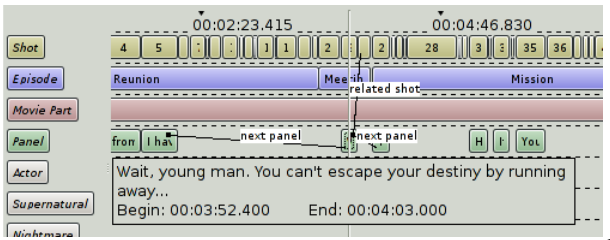
panel1 | panel2

View definitions: templates, rules...

Queries

Resources





Package

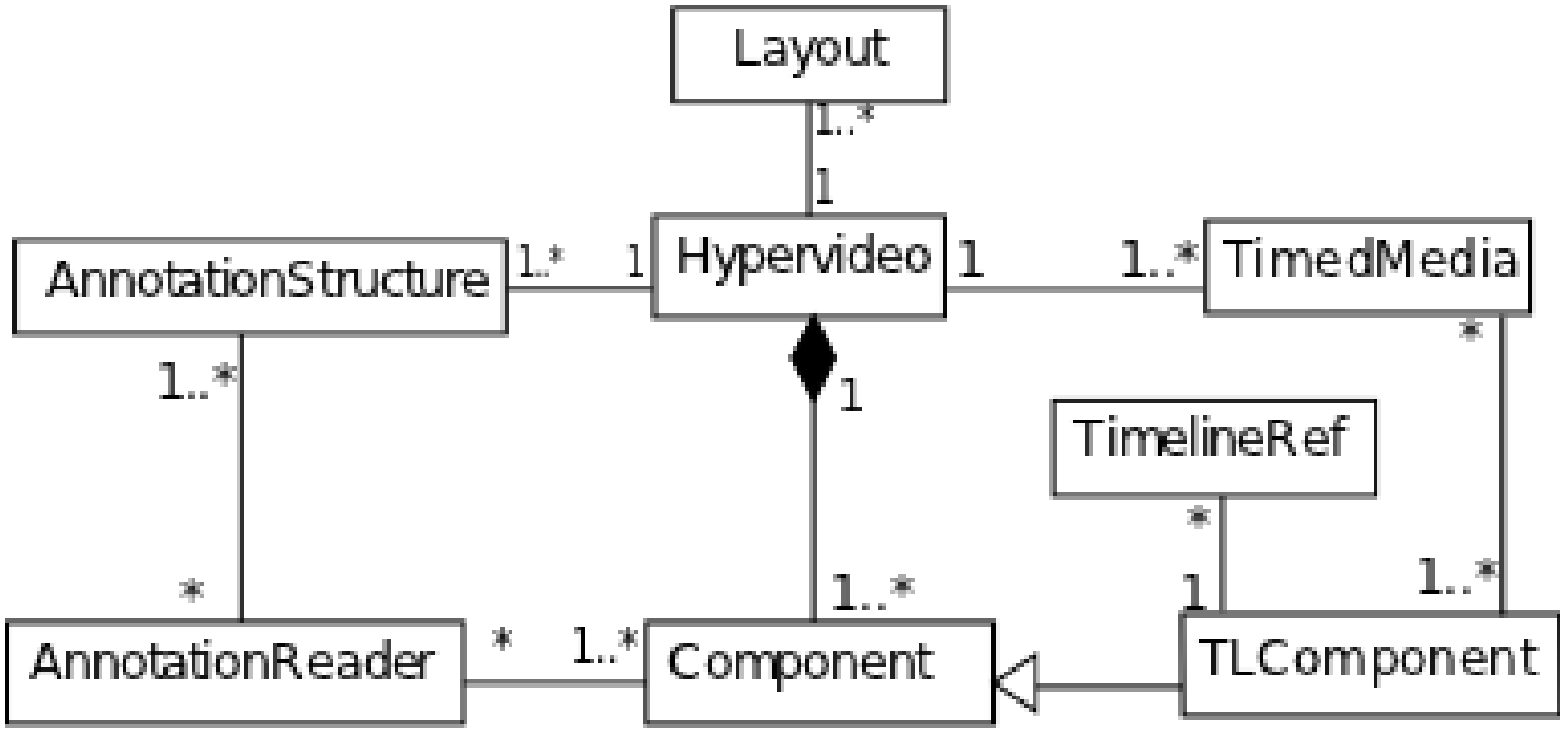
Advene lessons

- Validated vision of hypervideo concepts and annotation usage
- But : poor bet on visualisation emergence – did not meet appropriate users
  - Need to provide bootstrap components/examples
  - With appropriate level of malleability / expressivity

CHM : Component-based Hypervideo Model

- Main goals :
  - Conceptual and implementable model
  - Explicit annotation decoupling
  - Expressivity / simplicity

General overview



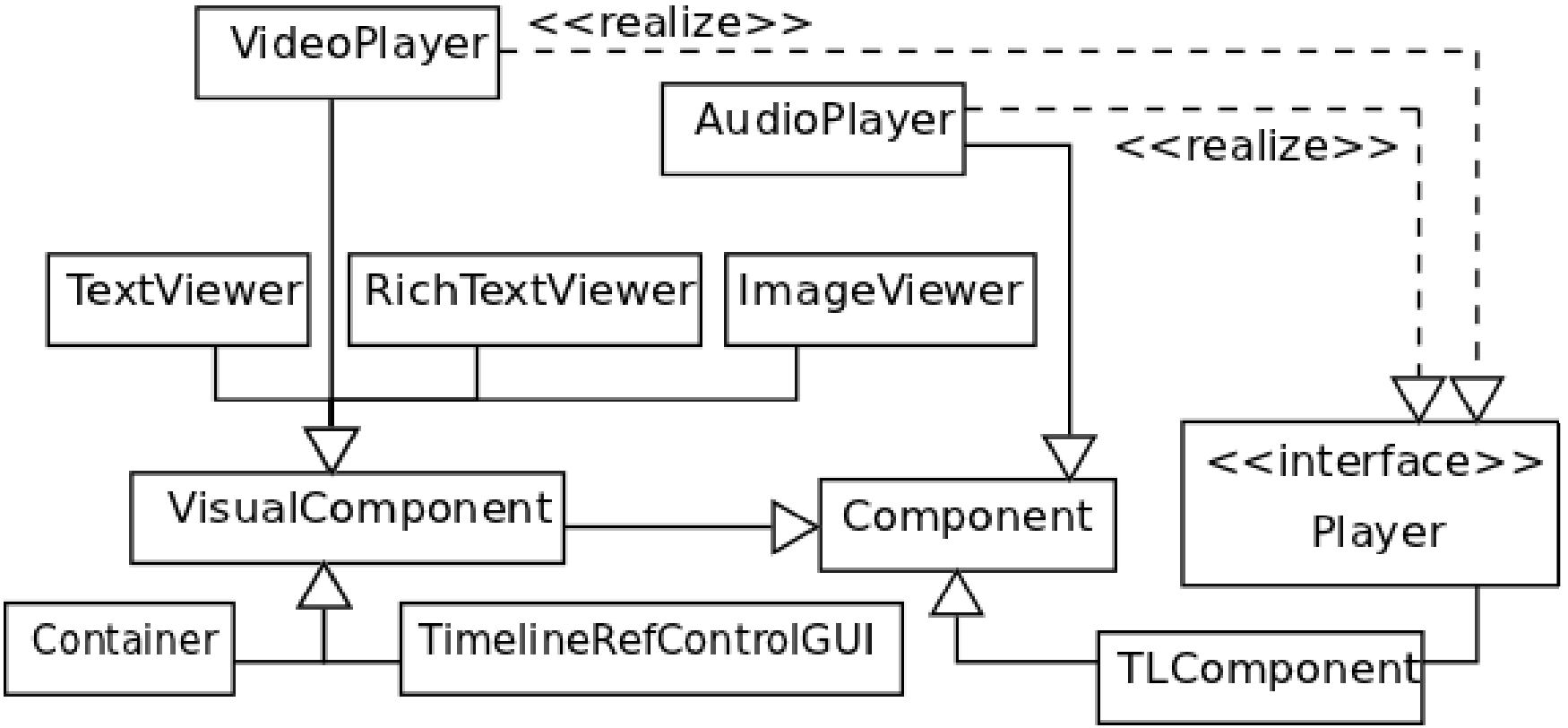
Core concepts

- Timeline reference
  - Linked to a Media Player
  - Attributes : position / duration / status
- Components
  - Visual / non-visual
  - Timeline-based / non-timeline-based

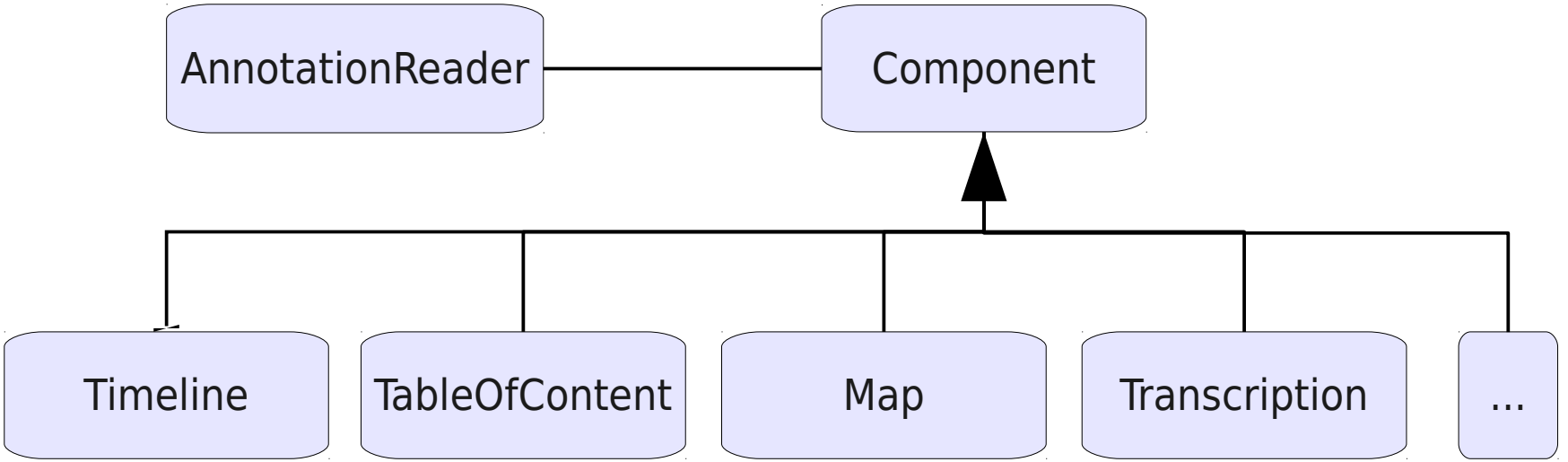
Data model

- Advene / Cinelab model
  www.advene.org/cinelab
- Annotation :
  - Video reference
  - Start/end timecodes
  - Type (identifier)
  - Content

CHM Plain components



CHM High-level components



WebCHM – an implementation

- Extended HTML with namespaced attributes
- Client-side javascript library
- Reuses libraries (mediaelement.js, timesheet)
- Extensible

Simple example : ToC

```
<div chm:component="jsonreader" id="data"
     chm:src="data.json" >

<div chm:component="videoplayer" id="tr"
     chm:src="video.ogv" >

<div chm:component="toc" chm:src="data"
     title="Story parts"
     chm:filter="type=='Parts'"
     chm:content="${content}"
     chm:timelineref="tr" >
```

Conclusion

Documentation and prototype available at
http://advene.org/chm/

- Future work :
  - Extend model/vocabulary
  - Improve visual/interaction design
  - Complete implementation
  - Authoring environment
  - Cognitive studies

The End

Thank you for your attention.

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  - Visualisation

- importance : evidence
- ATM, metadata is mostly limited to ressource metadata
- Bridge the semantic gap
- Search : first thing that comes to mind. Need to cross the semantic gap though, it is the aim of many projects
- Linking : in the LinkedData perspective, AV cannot directly be linked. Need additional layers (annotations)
- Visualisation : seems obvious, but often overlooked: once you have found the video fragments that interest you, how do you visualise them appropriately ?

Visualisation

- Variety of visualisation modalities
- Two different goals:
  - Find the most appropriate visualisation for the annotations **for the current task**
  - Do not too tightly bind the annotations and their visualisations (prevents reusability)

► empower users with the ability to define their own visualisations

- visualisation of augmented videos
- «for the task carried out» : essential criterion
- if we design annotation content with a specific visualisation in mind, we can prevent the reuse of annotations through other means
- if we design visualisations too tighly linked with annotations, it prevents reusability -> lost time.

Until know, I have spoken about visualisation in general

Will introduce a concept that we think is appropriate

Hypervideo

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Additional property: video-centered
-> brings time

Hypervideo specificities

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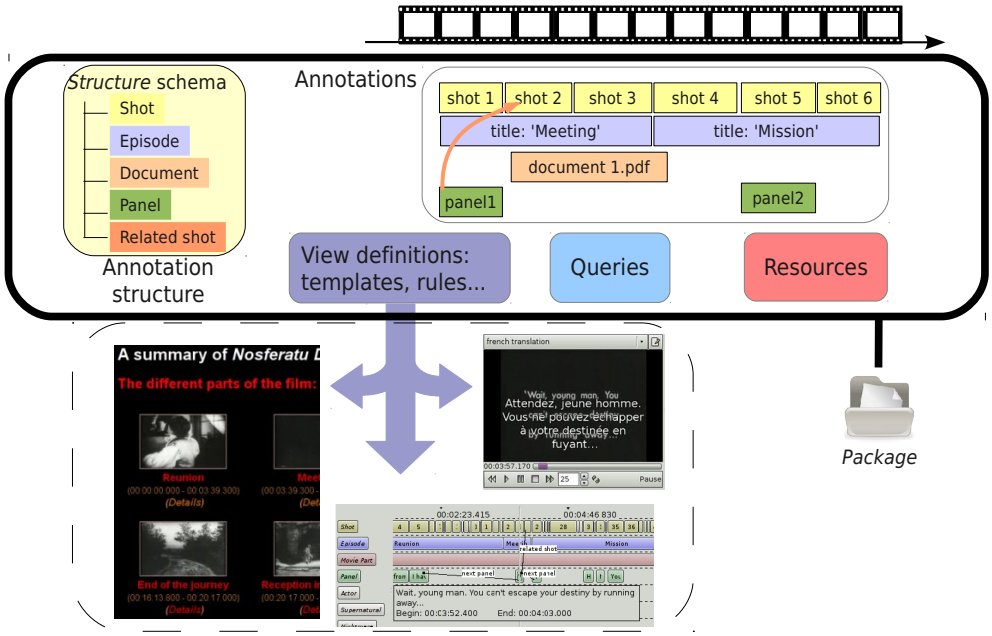
HV : restriction of generic hypermedia

Given the combination of video+annotations ->
- variety : AV- or annotation-focused (subtitles vs transcription) / temporal / non-temporal (static) / overview / detailed / synthesis...
- disorientation : common in hypermedia, but exacerbated

Before going into our proposal of a model for HV, I will give some information about where we come from.

Advene principle



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  - Need to provide bootstrap components/examples
  - With appropriate level of malleability / expressivity

These componenfts need to feature appropriate levels of malleability

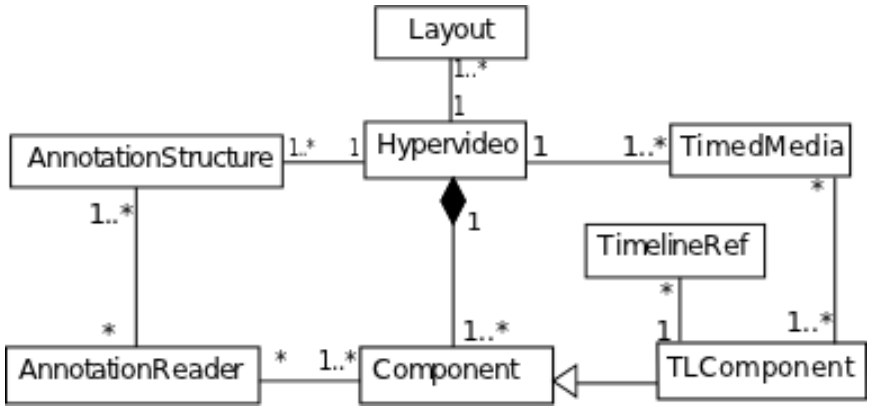
CHM : Component-based Hypervideo Model

- Main goals :
  - Conceptual and implementable model
  - Explicit annotation decoupling
  - Expressivity / simplicity

- There are other hypermedia models that introduce time (AHM + NCM). Our approach is compatible with AHM (but with more focused)

HV is a restriction of hypermedia – profit from this constraint

General overview



HV:based on augmented (AnnotationStructure) video (TimedMedia)

HV visualises augmented video through components

Layout : very general concept, supposed to use underlying implementation layout mechanism

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Visual artifact on screen
Non-visual (AnnotationReader, audio player)

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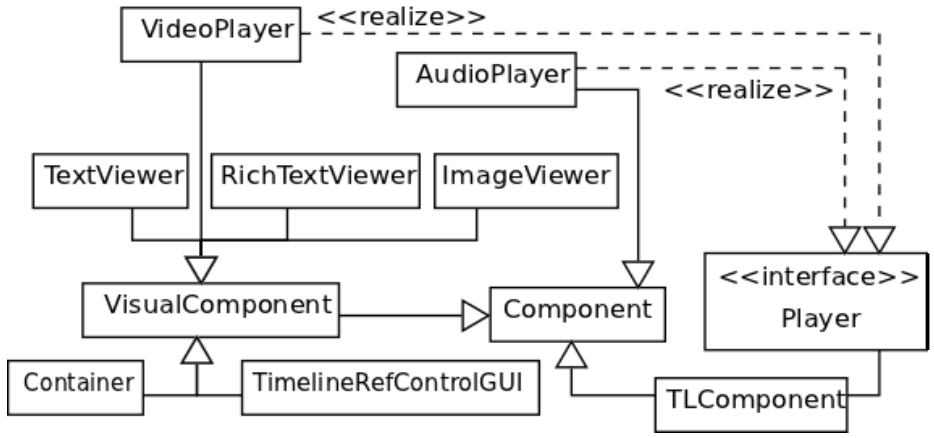
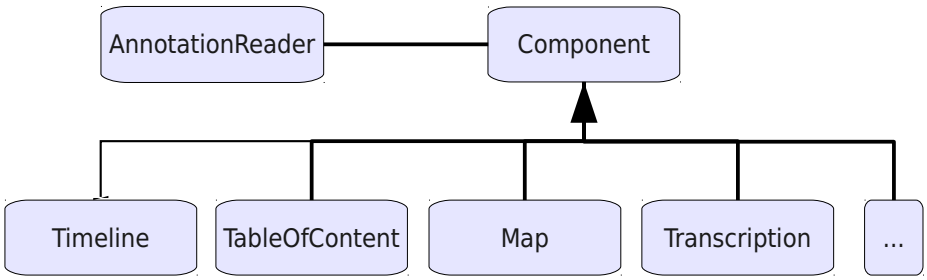


- basic components
- used to build more complex components, or can be used as-is

CHM High-level components



- emerged from the study of a number of existing hypervideos

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