An Export Architecture for a Multimedia Authoring Environment
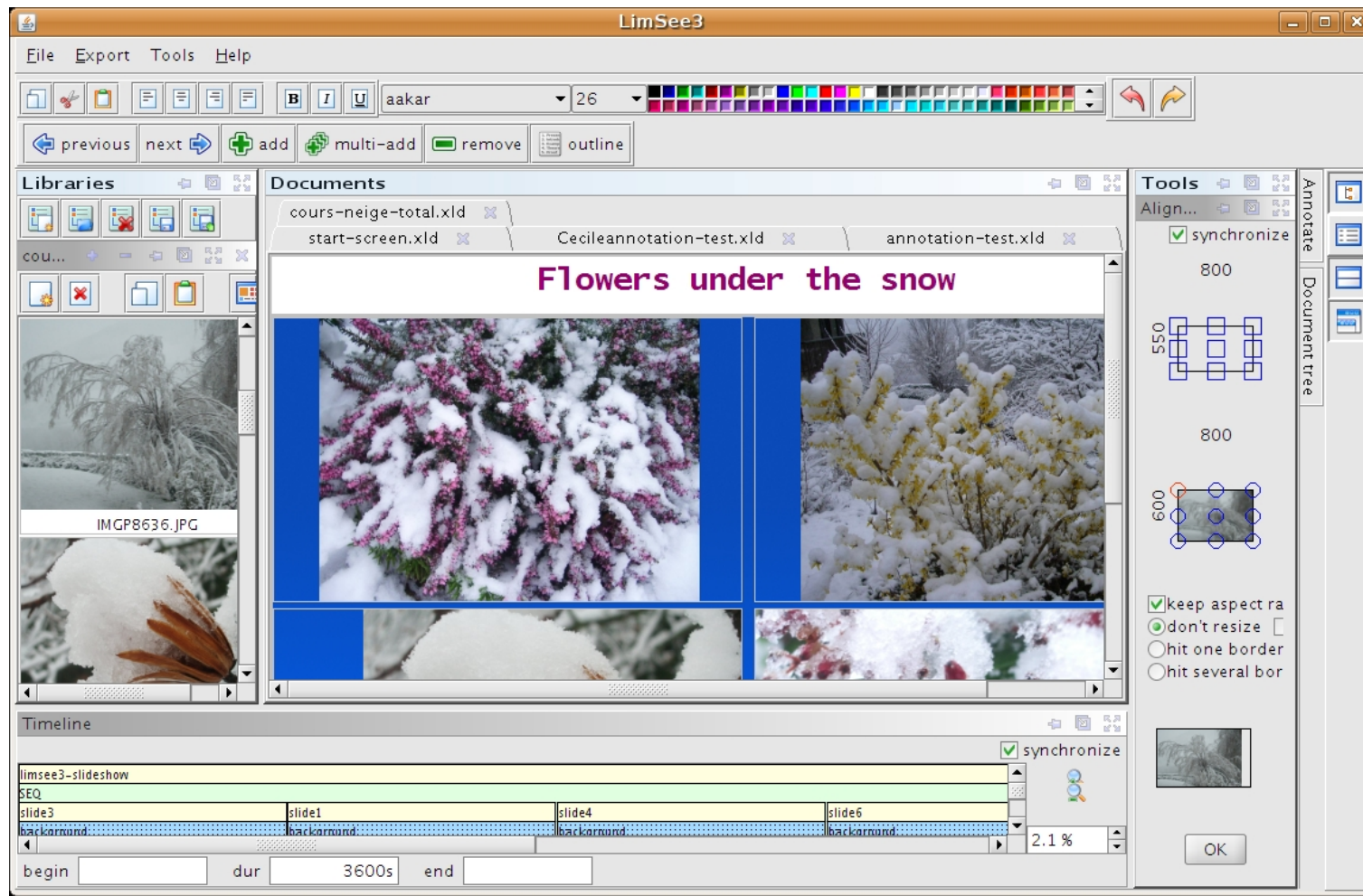
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Outline

1. For which Authoring Environment?

2. Why an Export Service?

3. What is our Solution?

The LimSee3 Multimedia Authoring Tool

- LimSee3:
  - provides end-users with authoring features through templates
  - separates authoring services from publication formats
  - experiments these services for Communities of Teachers:
    - for the creation of slideshows
    - for the building of registered multimedia courses
    - for the authoring of live annotations during oral exams

A Tour of LimSee3

- On top: general-purpose tools ... plus template-dependant tools
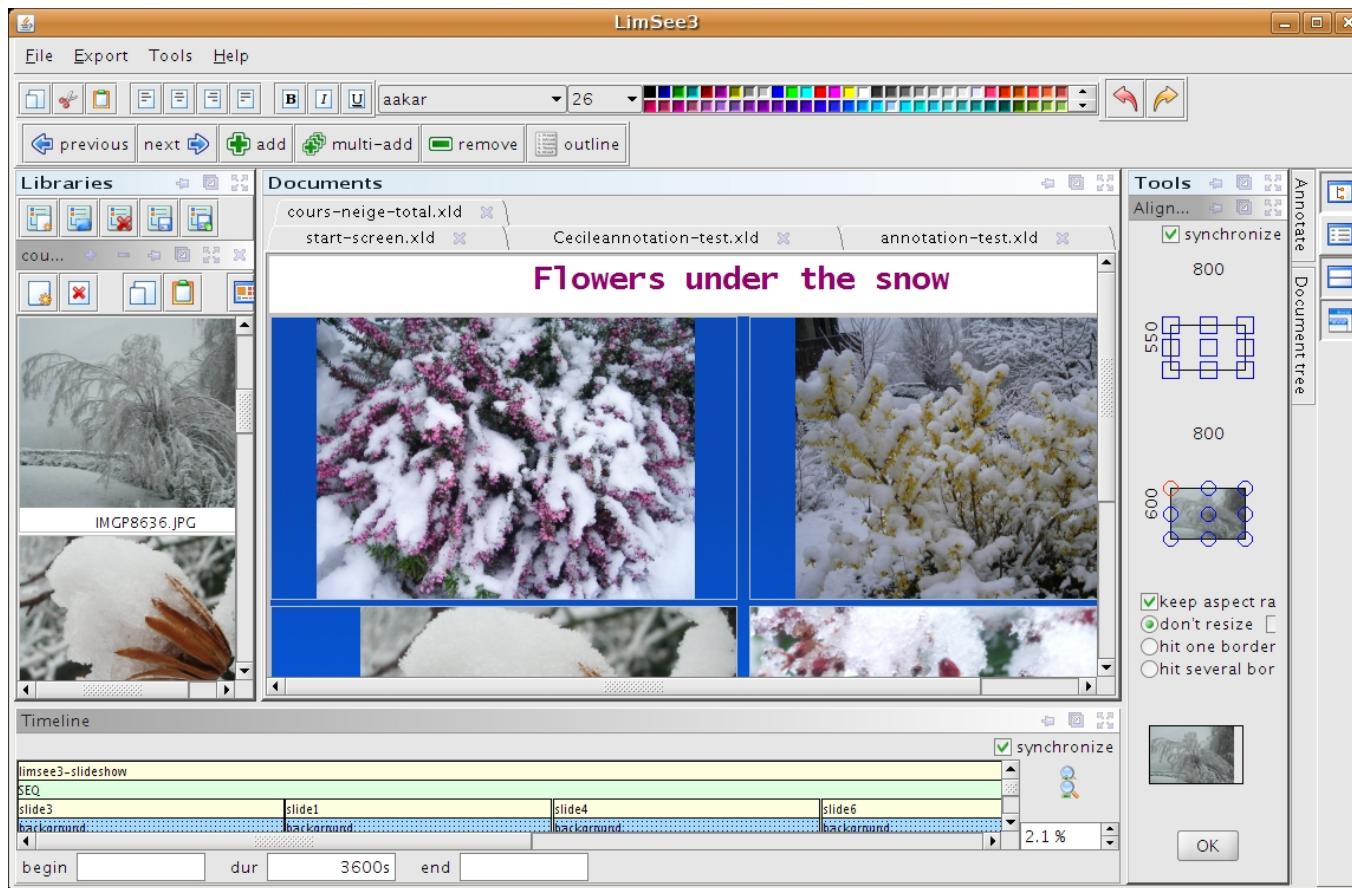
On the central area:

- a bookmark tool for aggregating media

- a wysiwyg spatial area for direct authoring

- spatial adjusment, structure/attributes tools

- On bottom, tools for managing synchronisation:
    - a generic timeline tool and/or specific services

Requirements for an Export Service

- Multiple multimedia formats: SMIL, HTML, javaScript, Flash, MPEG4...

- Multiple players/navigators

- Multiple usages:

  - a simple document access

  - with sharing media content

 - dependence with document types and user context

Principle of the export service
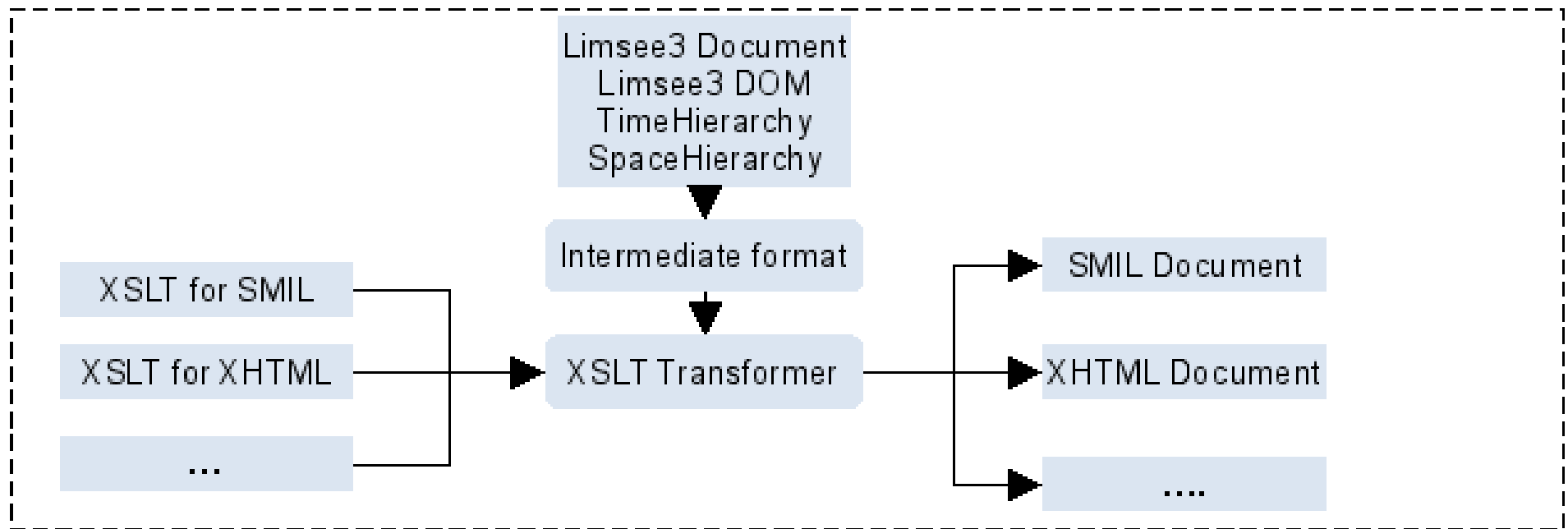
Requirements for an Intermediate Format

- Different document structures:
  - LimSee3 source: logical decomposition with layout and time properties at each level
  - SMIL output: layout on the HEAD, Time as main structure
  - XHTML output: Time and Style on the HEAD or external (Timesheet, Stylesheet), logical structure (and some layout) as main structure
- Need for an intermediate export format to:
  - Handle these different structures
  - While keeping and sharing all the document formatting data

Example: from LimSee3 to SMIL Structures
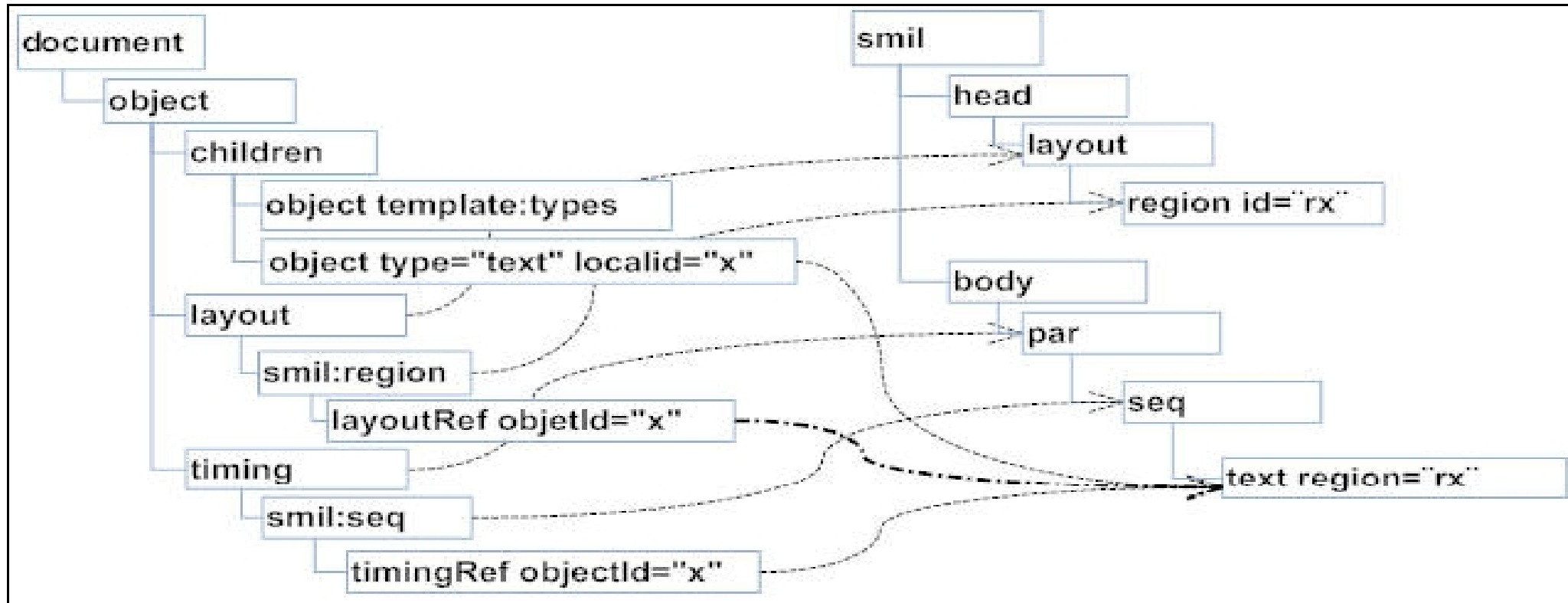
Intermediate Export Format

- Basically, 3 structures: layout, timing, logical,

- Completed with content objects and their references to their container in each structure,

- And comprising all statically computable information.

- The objective is to provide efficient export services thanks to reusable, structured and computed information.

Intermediate Format Example

source document

```
object slideshow
    object slide1
        object jingle src=foo.mp3
        object item1 src=media1
            timing begin=jingle.end+3s
            layout  height=50
        object item2 src=media2
            timing begin=item1.begin+3s
            layout  height=50 top=50%
        timing
    object slide2
        ...
    timing
        seq
            ref → slide1
            ref → slide2
    layout  width=800 height=600
```

intermediate document

```
layout
    region L1 resolvedW=800 resolvedH=600 ...
        region L1.L2 resolvedW=800 resolvedH=50
            resolvedLeft=0 resolvedTop=0 ...
        region L1.L3 resolvedW=800 resolvedH=50
            resolvedLeft=0 resolvedTop=300 ...
```

```
timing
    seq timeroot.seq1
        par timeroot.slide1
            leaf slideshow.slide1.jingle
            par timeroot.slide1.item1
                begin=jingle.end+3s
                    leaf slideshow.slide1.item1
            par timeroot.slide1.item2
                begin=item1.begin+3s
                    leaf slideshow.slide1.item2
        par timeroot.slide2
```

```
references
    ref slideshow.slide1.jingle region=L1
        time=timeroot.slide1
    ref slideshow.slide1.item1 region=L1.L2
        time=timeroot.slide1.item1
    ref slideshow.slide1.item2 region=L1.L3
        time=timeroot.slide1.item2
```

Application to XHTML and SMIL
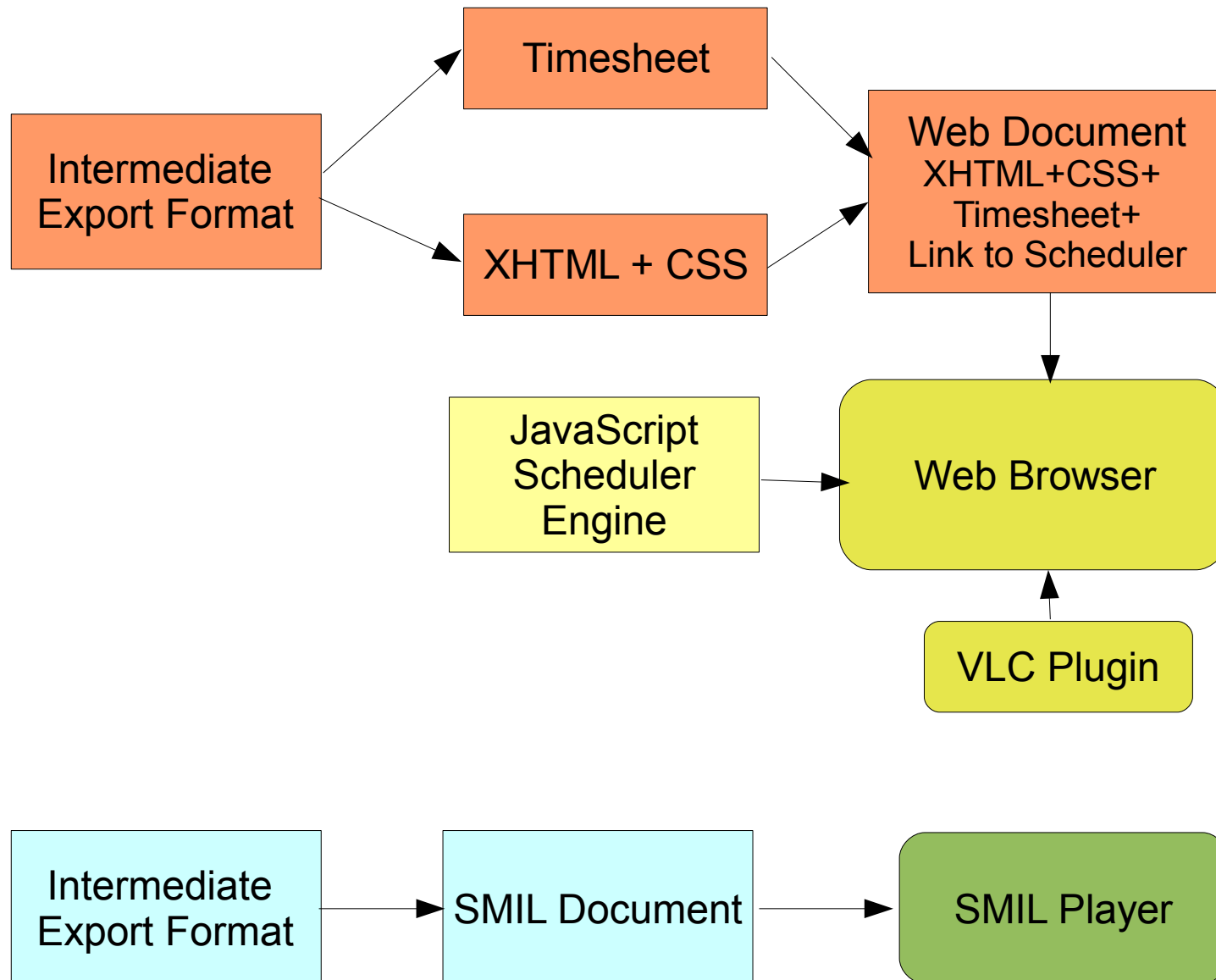
The Scheduler for Timesheets

- Inspired by Petri Vuorimaa code

- Management of continuous media (thanks to VLC plugin)

- Better management of time attributes

- User interaction and user control (pause/resume/stop)

Conclusion

- A solution to handle several multimedia formats and to provide easier access to multimedia authored documents

- Modular architecture to allow its use in other contexts:

  - Translation between other formats

  - Introduction of adaptation services