Adaptation logic for (server-side) media fragment extraction

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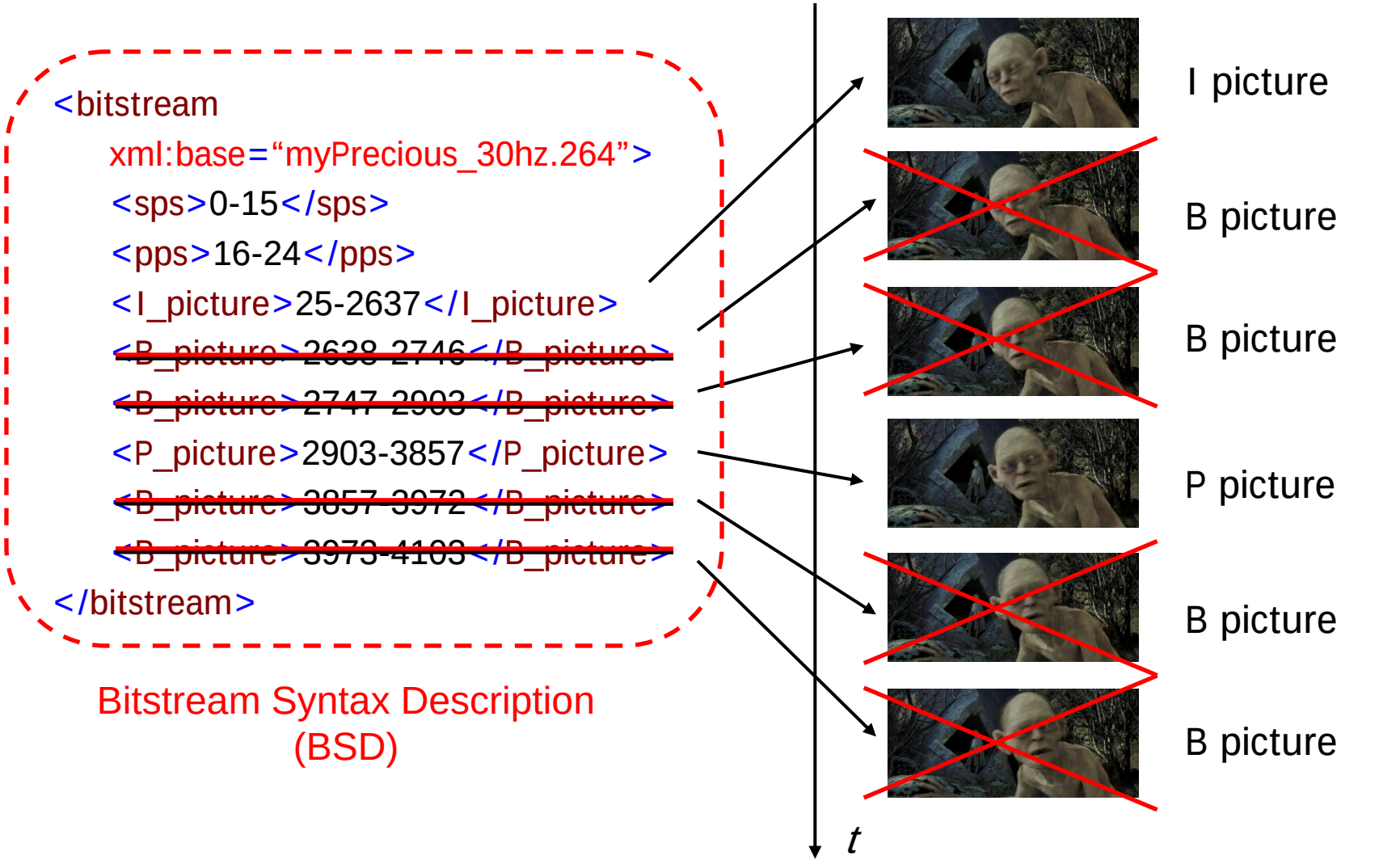
In this presentation

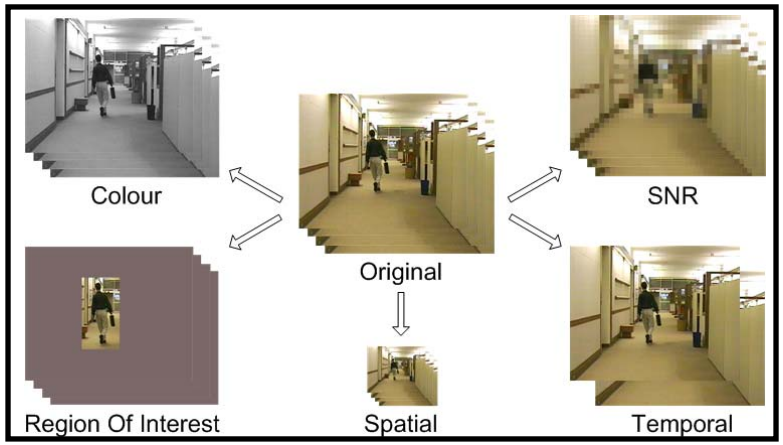
- Adaptation engine for extracting media fragments
  - no transcoding techniques are used
  - only high-level adaptation operations
- Presented approach is not an implementation of the Media Fragments URI scheme
  - no protocol implementation
  - but can be used to assist for example an HTTP Web server implementing Media Fragments

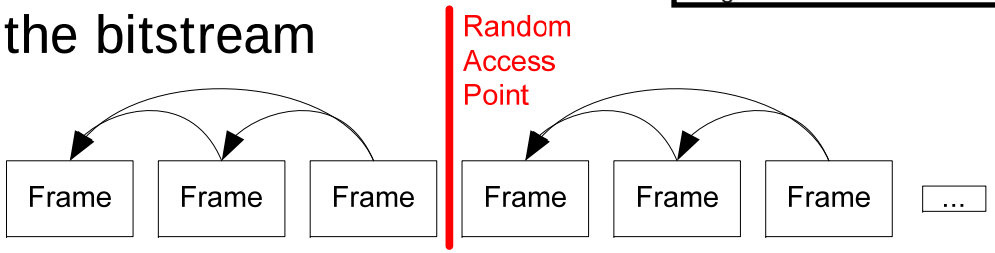
Format-independent content adaptation: principles



Limitations

- only high-level adaptation operations (i.e., no transcoding)
  - removal of data blocks
  - modification of high-level syntax elements
- What is possible?
  - exploitation of scalability
  - demultiplexing
  - temporal selection
    - on condition that random access points are present in the bitstream





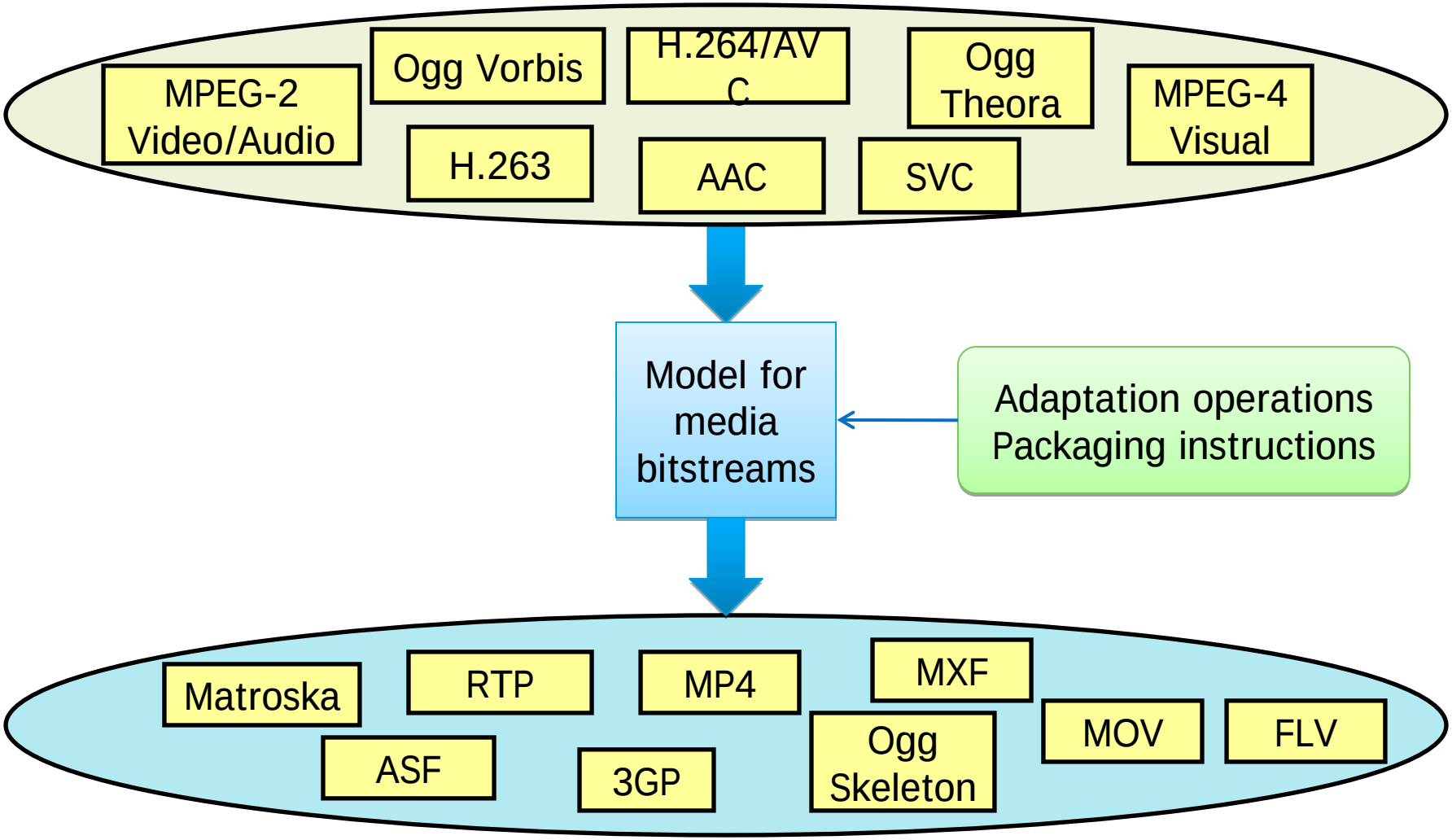
(XML-based) BSDs

- Benefits
  - enables the use of adaptation software that is independent of the underlying media format
    - easy extensible
  - link with other metadata
    - e.g., description of the media content
  - existing XML tools can be used for BSD manipulation
    - e.g., XSLT or STX
- Two technologies were standardized within MPEG-21 DIA
  - MPEG-B BSDL & MPEG-21 gBS Schema
- Related technologies
  - XFlavor, (g)BFlavor, Preon, ...

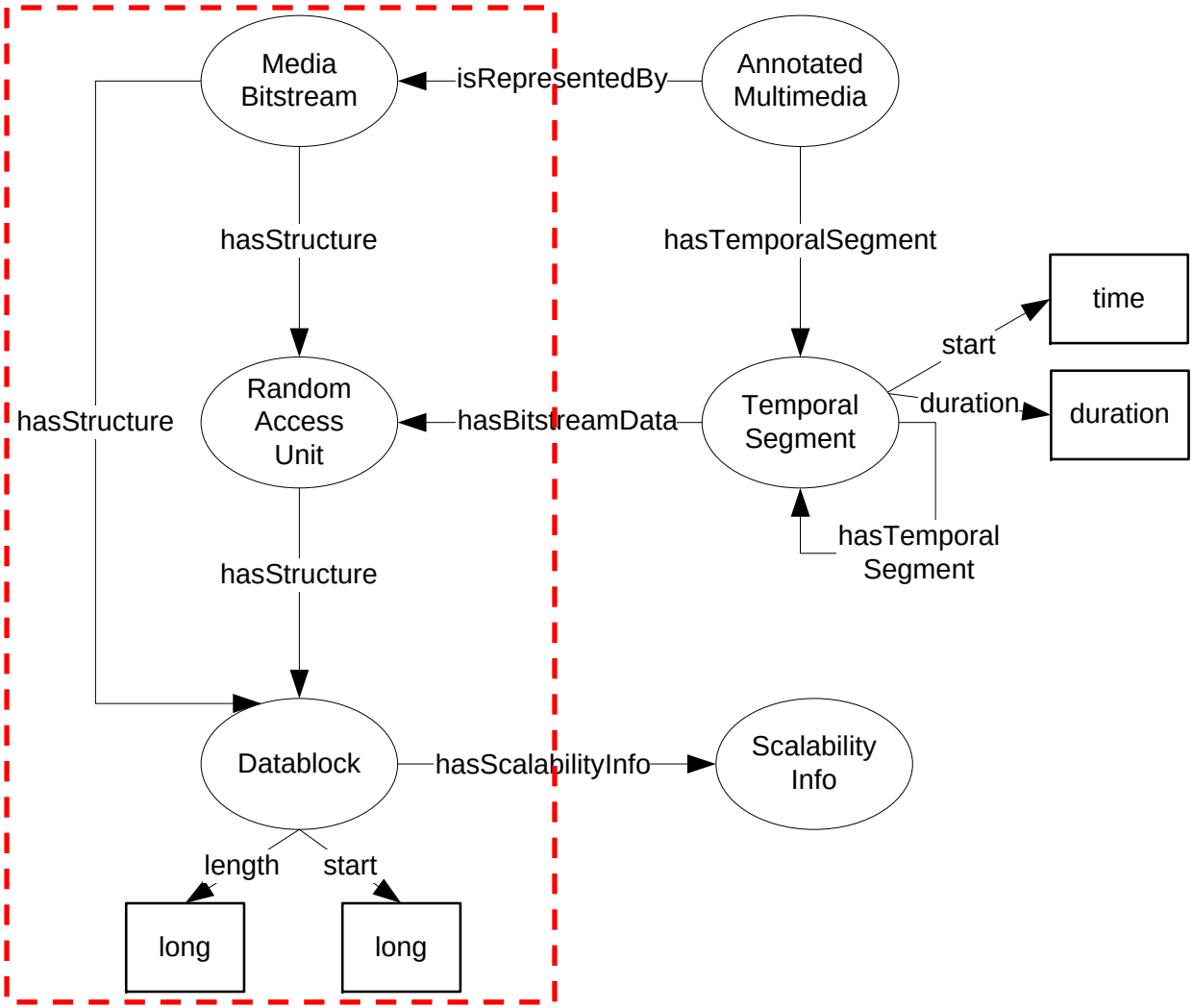
RDF-driven content adaptation & delivery

- Developed during my PhD
- Inspired on principles of BSD-driven content adaptation
- Features
  - format-independent adaptation and packaging of media bitstreams
  - abstracted adaptation operations
  - integration with the Semantic Web
  - track & temporal media fragment selection
- Based on a model for media bitstreams
  - implemented in OWL

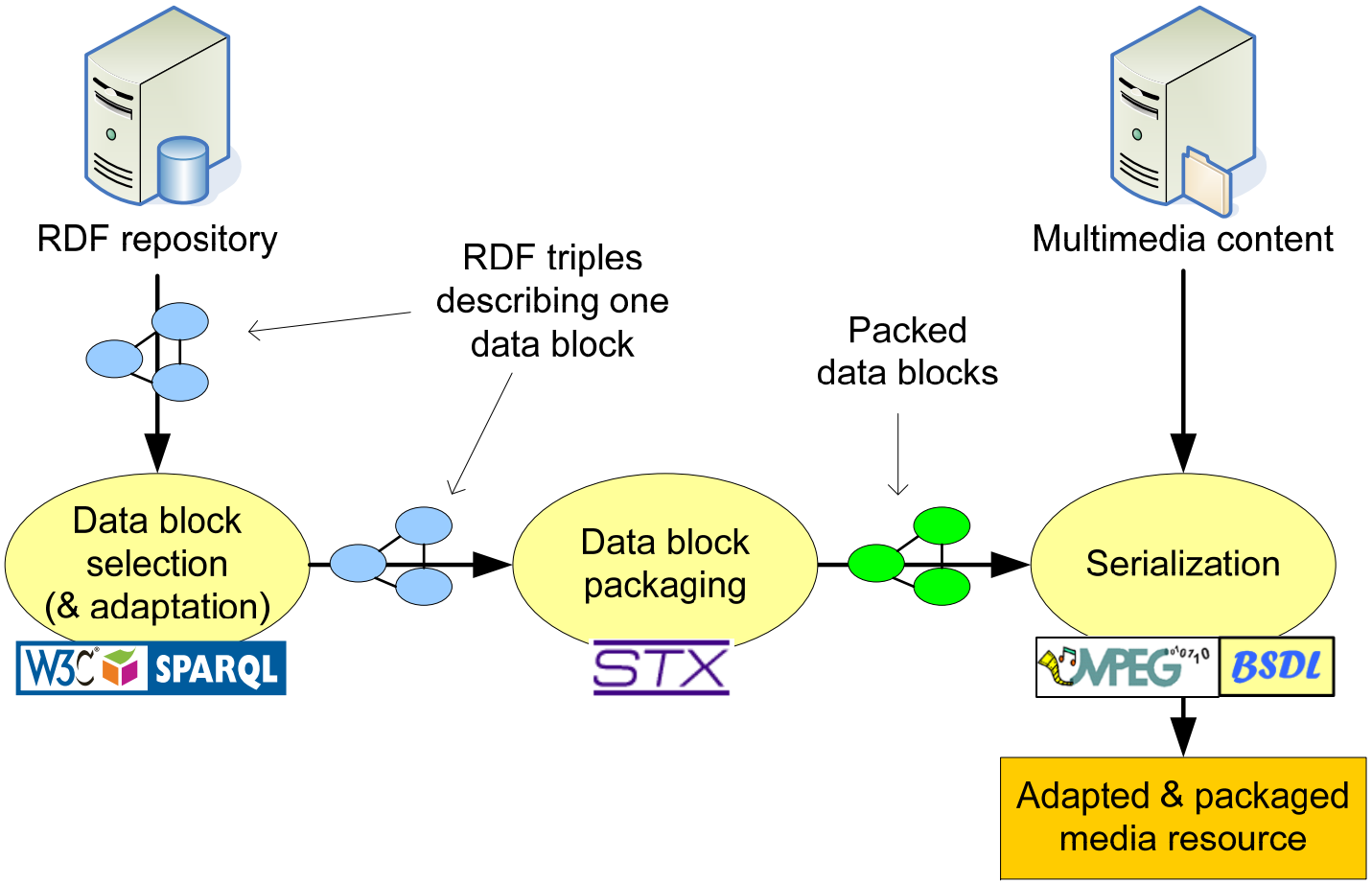
Model for media bitstreams (1/2)



Model for media bitstreams (2/2)

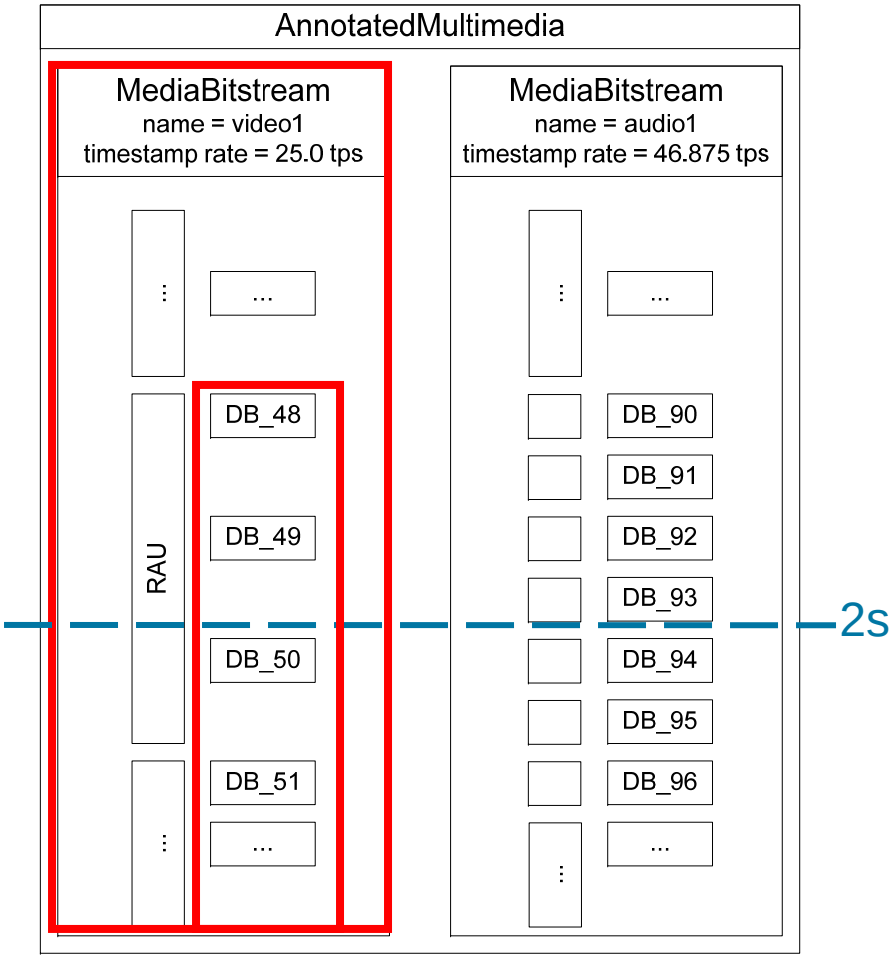


Adaptation & delivery workflow



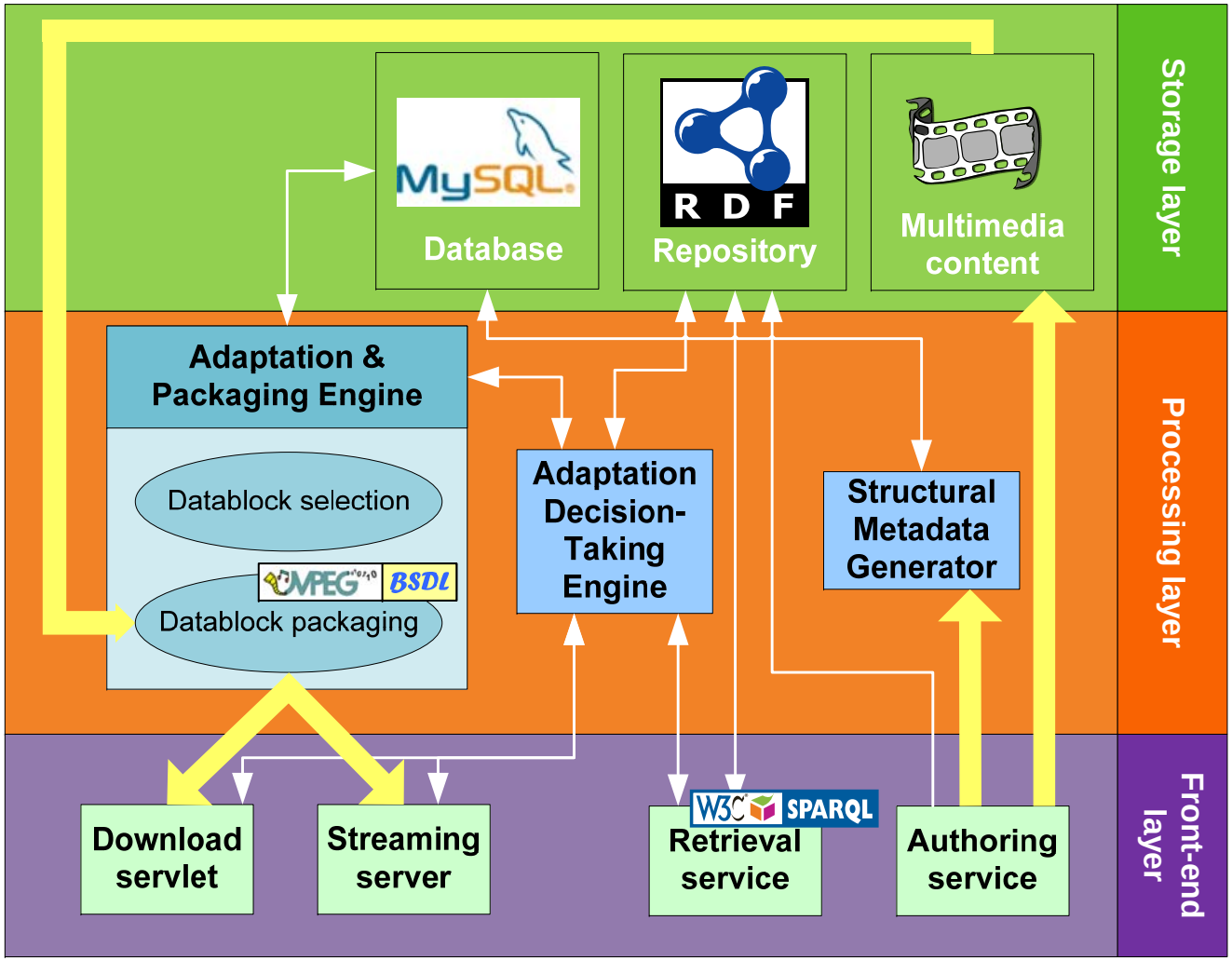
RDF-driven Media Fragment Extraction

http://foo.com/media.mp4#track='video1'&t=2,10



- Track selection
  - selection of *MediaBitstreams*
- Temporal selection
  - selection of *DataBlocks*
  - based on their timestamps

NinSuna: implementing RDF-driven adaptation



Remarks

- Media resources need to be ‘ingested’, before we can adapt and deliver them
  - generation of structural metadata
- media.mp4#track=‘video1’&t=2,10
  - name of AnnotatedMultimedia is ‘media’
  - delivery format is MP4
  - track & temporal selections need to be executed