

Multimedia-Metadaten und ihre Anwendung

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Metadaten-Autorentools

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Einführung

- Was sind Metadaten-Autorentools?
- Analyse
- Strukturierung der Daten
- Metadatengenerierung

Metadatentools

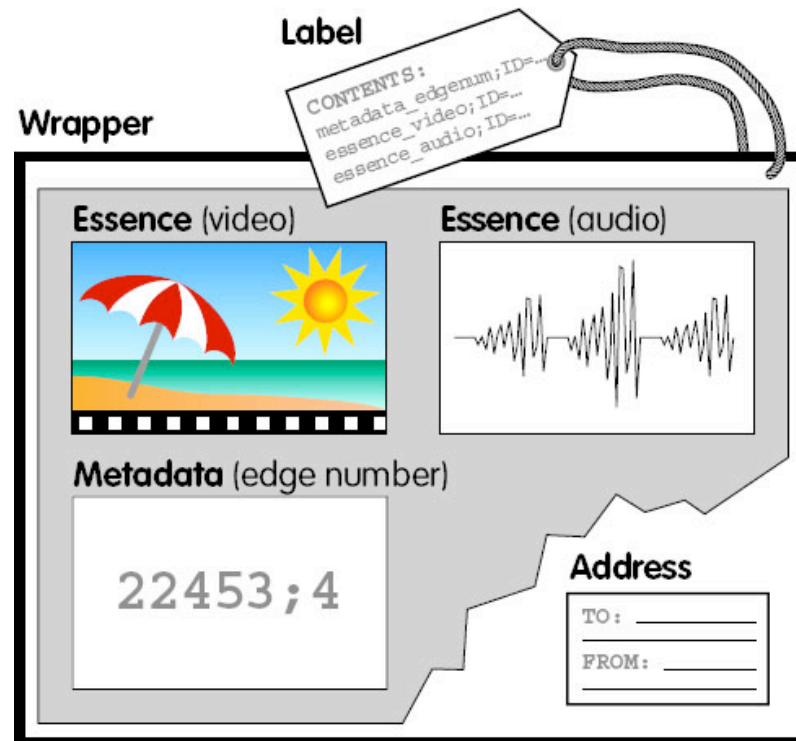
- Inhaltsbestimmung und Validierung
 - AAF (Advanced Authoring Format)
- Neu-Strukturierung mittels Metadaten
 - MPEG-7 Standard

Advanced Authoring Format

- AAF-Association entwickelt
- Ausgelegt auf Post-Production-Environment
- Unterstützt den Austausch von multimedialen Dateien.
- AAF SDK - Open-Source Projekt

AAF

- Aufbau einer AAF Datei:

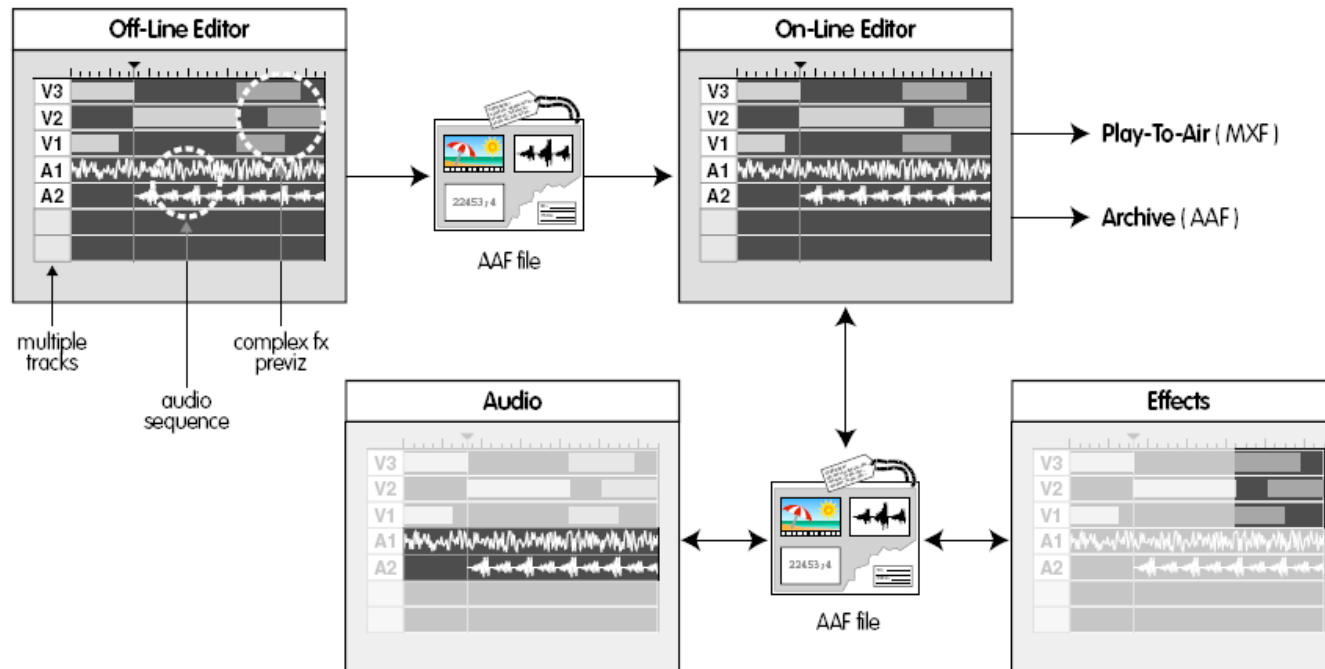


AAF-Entwicklung

- SDK – C++ Bibliotheken
 - Mit unterschiedlichen Metadaten-Klassen
 - Mehrere Sets von AAF-Objekten
 - Veränderung der Metadaten verändert die Rohdaten
 - Modifikationen wie Effekte und Schnitt werden durch Metadaten simuliert.

AAF

- Datenaustausch mit AAF



AAF enhances workflow by allowing specific parts of a composition to be sent to an appropriate application for treatment and then gathered back into the whole.

Tools mit MPEG-7 Standard

- Metadaten Extraktion auf Bildebene
 - Kontur
 - Bewegung
 - Farbe
 - Textur

Neu-Strukturierung

- Video-Struktur-Analyse
- Unterscheidung einzelner Szenen/Segmente
- Szenen enthalten Bilder oder können wiederum Szenen enthalten
- Ziel: Baumstruktur

XML-Struktur

```
<VideoSegment id="ID4"
startIndex="0"
endIndex="1000"
keyIndex="0">
<Name>Segment 4</Name>
<TextAnnotation/>
</VideoSegment>
```

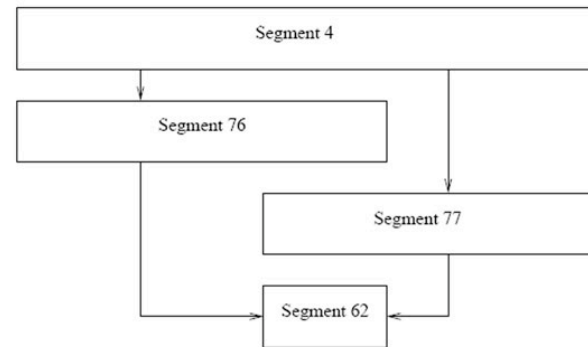
...

```
<VideoSegment id="ID62"
startIndex="500"
endIndex="700"
keyIndex="500">
<Name>Segment 62</Name>
<TextAnnotation/>
</VideoSegment>
```

...

```
<VideoSegment id="ID76"
startIndex="0"
endIndex="700"
keyIndex="500">
<Name>Segment 76</Name>
<TextAnnotation/>
</VideoSegment>
```

```
<VideoSegment id="ID77"
startIndex="500"
endIndex="1000"
keyIndex="700">
<Name>Segment 77</Name>
```

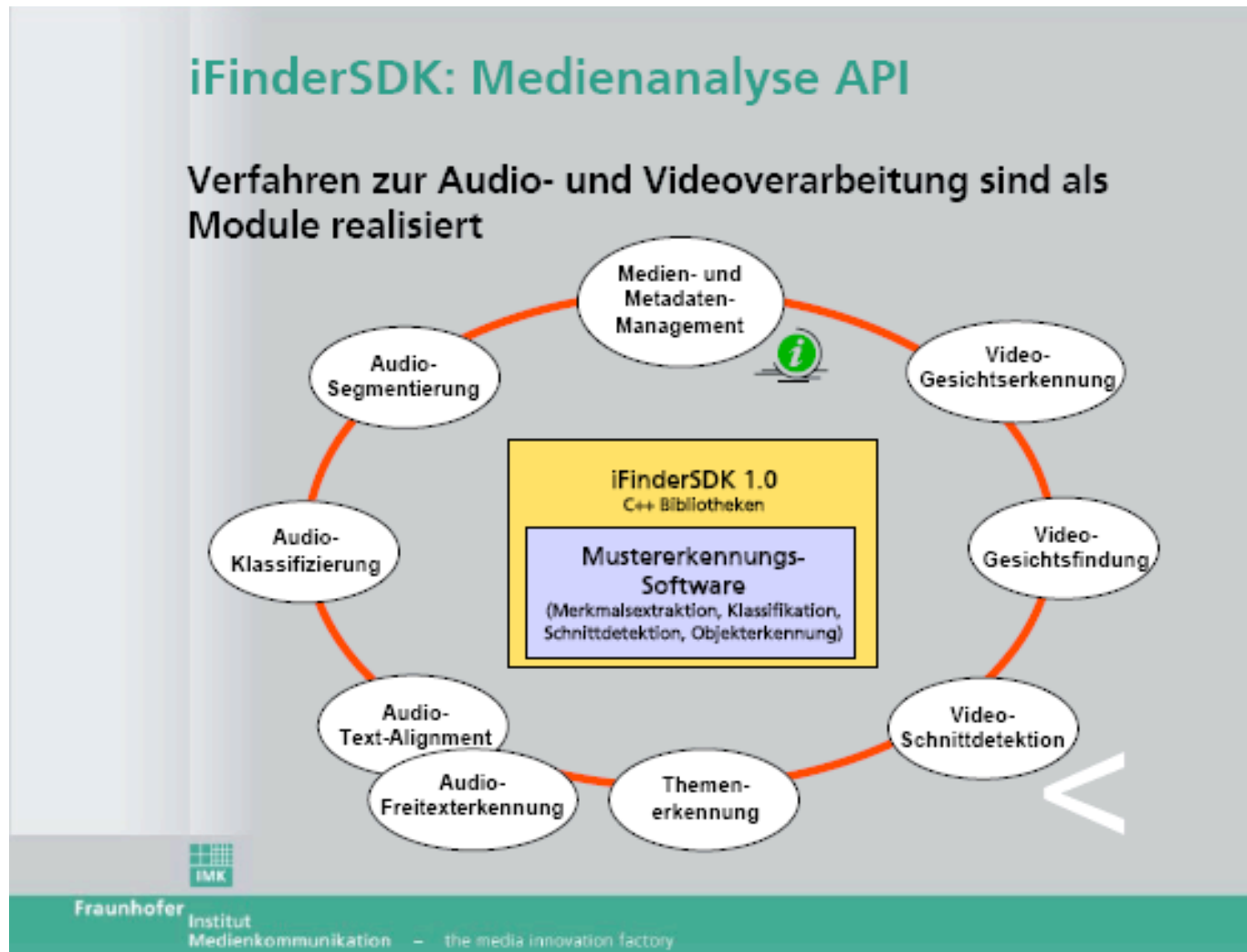


```
<TextAnnotation/>
</VideoSegment>
<SegmentRelationshipGraph>
<SegmentNode idref="ID4">
<SegmentNode idref="ID76">
<SegmentReference idref="ID62"/>
</SegmentNode>
<SegmentNode idref="ID77">
<SegmentNode idref="ID62"/>
</SegmentNode>
</SegmentRelationshipGraph>
```

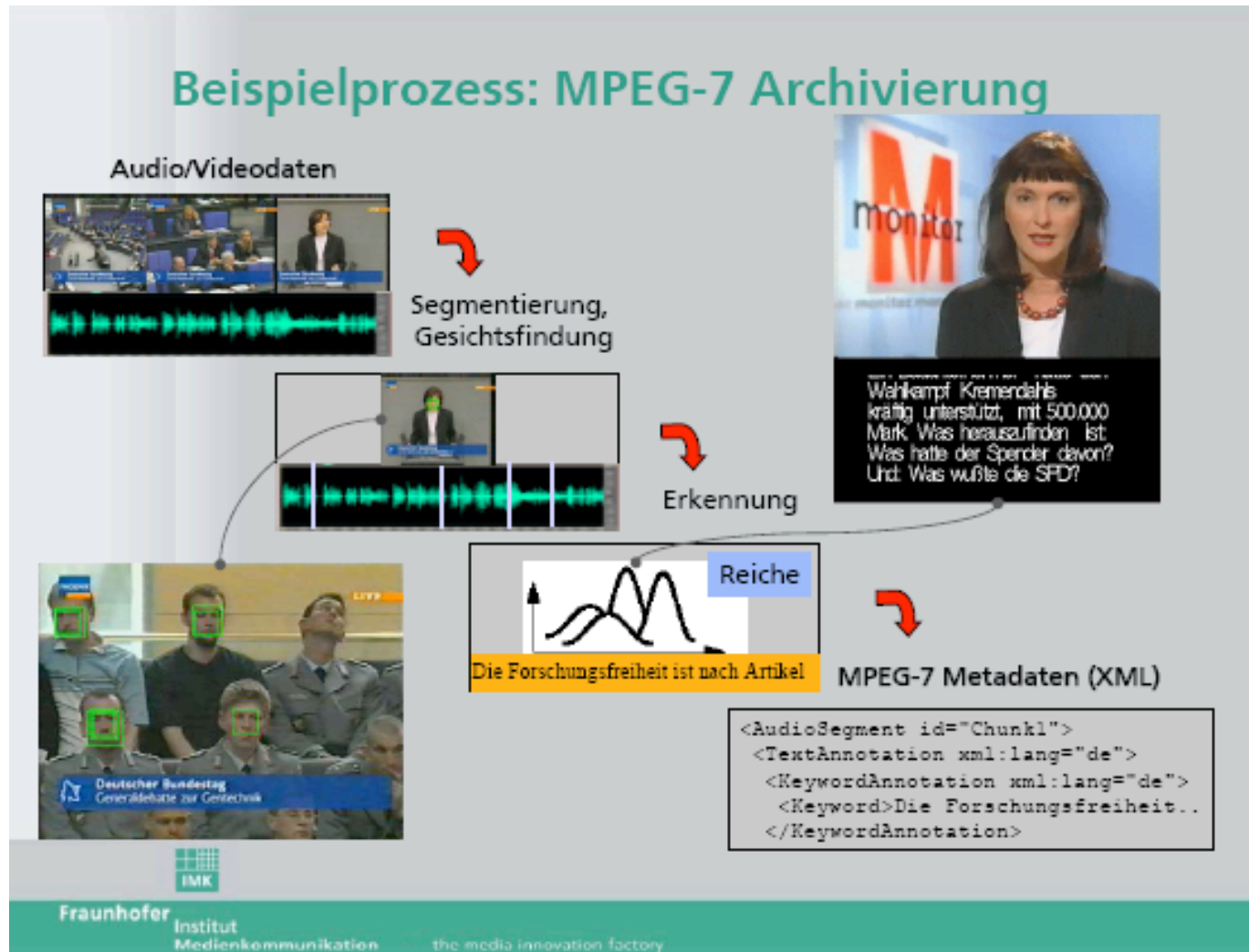
I-Finder des Fraunhofer Instituts

- Vollautomatisches Archivierungstool
- I-Finder
 - I-Finder SDK in C++ Bibliotheken
 - Multimedia Retrieval Maschine
 - Media Archivierung: Metadatenerzeugung
 - Outputformat: MPEG-7 und XML Dokumente
 - Datenbankbindung

I-Finder Module



Archivierungsprozess



I-Finder Suchergebnis Interface

Der Text/Video-Browser: Demo

The screenshot shows the I-Finder Client Ver. 2.0 interface. The main window is titled "Text Video Browser - Streaming". It features a text area on the left with a search function and a video player on the right. Below the video player, there are sections for "Query Information" and "Result Information".

Query Information:

- Speaker: Juergen Trittin
- Date: 2002-06-14
- Keywords: Abwasser, Abwasserentsorgung ...

Result Information:

- Start time of Speech: 09:36:25
- Duration Of Speech: 10 mins
- Party of the Speaker: Bündnis90/DieGrünen

At the bottom of the interface, there are navigation buttons for "Previous" and "Next".

VIMIX (Video Metadata in XML)

- Forschungsgegenstand der Universität Sidney
- Halbautomatisches Tool basierend auf MPEG-7 Standard
 - Neustrukturierung der Rohdaten
 - XML-Outputformat
 - Manuelle Eingabe von Metadaten für Segmente und Schlüsselattribute

Vimix (Video Metadata in XML)

The screenshot displays the Vimix application interface, which is used for managing video metadata. The main window is titled "Video Metadata In XML - sound_of_music.xml:1".

XML Output View: The top right pane shows the XML structure for the video collection:

```

<?xml version="1.0" ?>
- <VideoCollection
  xmlns="I:\thesis\doc\result\sound_of_music.xsd">
+ <Video id="VIDEO_ID20">
- <Diegetic_Level id="VIDEO_ID59">
  <Name>Diegetic Level</Name>
- <Cast id="VIDEO_ID58">
  <Name>Mother Abness</Name>
  
```

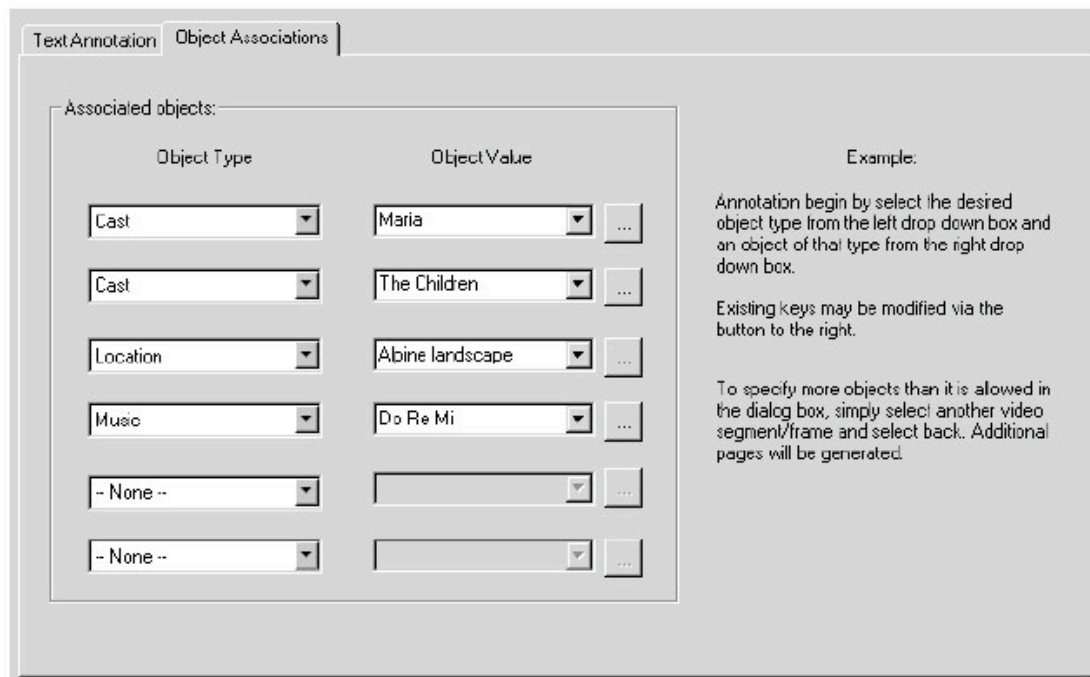
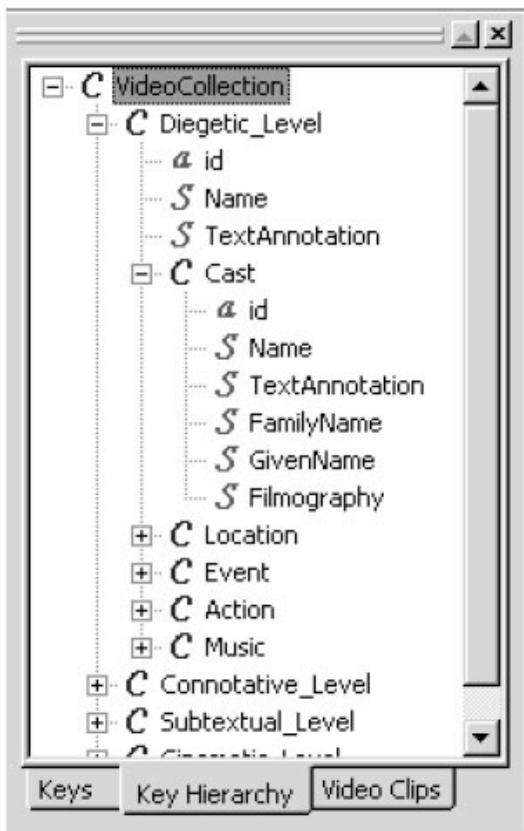
Video Player: The bottom right pane shows a video player window titled "D:\thesis\sonfinal3.mpg-Sound Of Music". It includes a video frame and control buttons: "Set Start Frame" (457), "Set End Frame" (1010), "Seek To Frame" (input field), "Add Clip", "Add Frame", and "Reset".

Metadata Browser: The top left pane shows a tree view of the video metadata, including "Sound Of Music", "The Beginning", "Music Clips", "Being a Govern", "The Baroness", "Running Away", "Revealing True", "Performing at t", and "Escape".

Timeline: The bottom pane shows a timeline view of the video metadata, with a scale from 500 to 8500. It displays various clips and their durations, such as "The Beginning", "Leaving the Ab", "Being a Governess", "Sound Of Music", "Me", "Go Re Mi", "Captain is Home", and "Music".

At the bottom of the window, there is a status bar with the text "For help, press F1" and a "NUM" button.

Metadaten User Interface



Fazit

MPEG-7 vs. AAF sind beide wirtschaftsfähig.

Beide besitzen eigene Ressorts.

Problem: Wenig Einblick hinter die Kulissen möglich

Weitere Tools: Text-Annotation-Tools

Referenz

1) Paper: „The Development of A Video Metadata Authoring And Browsing System in XML“: Yao, Jin, School of Computer Science and Engineering, University of New South Wales, Sidney, Australia

2) <http://www.aafassociation.org>

3) <http://www.imk.fraunhofer.de>