

# Design and Application of a Media Resource Cataloging Website for Industry University Research Integration

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**Abstract:** Cataloging is an important part of media asset management, which is the metadata description of media content. Typically, media asset cataloging for television stations and other units is carried out in internal network systems. This article introduces a media resource cataloging website for the integration of industry and academia. Relying on a public cloud platform, it can meet the practical teaching needs of related courses, apply to enterprise cataloging outsourcing services, and provide a shared platform for cataloging research.

**Keywords:** cataloging; Integration of industry, academia and research; speech recognition

## 1. Overview and current situation of media asset cataloging

According to the definitions of the Society of Motion Picture and Television Engineers (SMPTE) and the European Broadcasting Union (EBU), content includes materials and metadata. Essence, the original program material itself, exists in the form of audio, video, images, text, etc., containing actual messages or information, and is called media. Metadata, used to describe actual materials and their different forms of presentation, is typically interpreted as 'data about data'. The former "data" refers to the "material" itself, while the latter "data" is metadata, which describes the data of the material.

Metadata, as "data about data", is used to describe the content characteristics and other features of data itself. Its purpose is to enhance the discovery, identification, development, organization, and evaluation of network information resources, and to select, locate, and call relevant information resources, track changes in resources during use, and achieve the integration, effective management, and long-term preservation of information resources.

Cataloging media content essentially involves metadata description of the media content. In the media asset management system, cataloging work is mainly divided into two types: cataloging that supports program production and cataloging that supports data storage and reuse.

Supporting the cataloging of program production, the main cataloging objects are the pre production materials for program processing and production. Its characteristics are high real-time performance, low requirements for in-depth description of materials, simple and fast cataloging requirements, and providing simple cataloging of materials for program editing and production use. Supporting cataloging for data storage, mainly aimed at processed programs and selected materials for long-term preservation. Its characteristics are low real-time requirements, detailed description of cataloging objects, standardized and detailed cataloging requirements, and the need to configure a complete cataloging team: ordinary catalogers, visual analysts, senior catalogers, cataloging auditors, and higher-level cataloging specialists. The standardized and thoroughly described media asset data information is entered into the database of the media asset management system for unified management.

From the perspective of media asset cataloging applications in television stations or integrated media centers, cataloging media content is an important part of media content management. In addition to cataloging current production and storage content, it also requires cataloging a large amount of digitized historical data, which is a huge workload. There are two ways to complete this cataloging work: outsourcing cataloging and self cataloging. Outsourcing cataloging is to provide low bitrate copies of archived videos to outsourcing companies, and after the outsourcing company completes the cataloging, the cataloged metadata is put into an XML document and imported into the database. Self cataloging is completed using the software platform on the platform. Most of the tasks completed within the platform are done using the internal network, and the cataloging operations and data are relatively closed.

With the development of integrated media technology and various self media network platforms, media content management is no longer limited to the application of television stations at all levels. Various media enterprises need to manage and catalog media content. This article introduces a cataloging website that integrates industry, academia, and research. It can meet the practical requirements of media content management courses and provide cataloging research and services for enterprises in combination with practical training.

## 2. Website Design

### 2.1 Website Technical Architecture

The website adopts a B/S structure and relies on a public cloud platform to break through the internal network restrictions of various levels of TV towers, allowing cataloging work to be completed anywhere and anytime with only a network and browser.

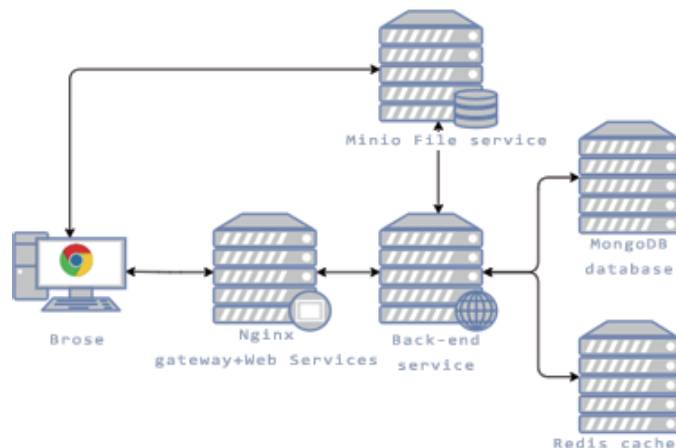


Figure 1 Website Technical Architecture Diagram

## 2.2 Website Functions and Features

### 2.2.1 Website Function Design

This cataloging website has general functions such as material management, cataloging task allocation, cataloging, archiving, and querying, meeting the needs of media content cataloging.

In terms of cataloging content, the cataloging fields have been streamlined according to actual needs within the framework of the “Specification for Cataloging of Radio and Television Audiovisual Materials Part 1: Television Materials” (GY/T 202.1-2004) currently implemented in China’s broadcasting and television industry. It can perform video structure segmentation, metadata cataloging, and keyframe extraction.

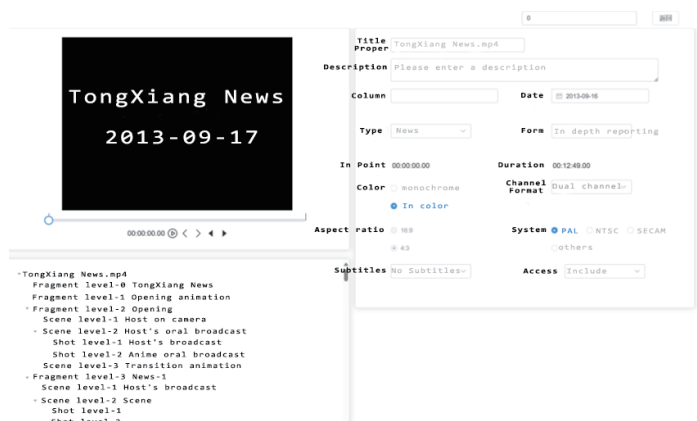


Figure 2 Cataloging interface diagram

In terms of cataloging process, it includes the entire process of task allocation, cataloging and recording, cataloging review, and archiving.

In terms of system management, the website has two parts: management and cataloging. The management end can perform user management, video content management, and cataloging data management, while the cataloging end performs cataloging operations.

### 2.2.2 Characteristics of Industry University Research Integration

This website is designed for practical training in the course of “Intelligent Media Content Storage and Management” at Zhejiang Media College, so it has obvious characteristics of industry university research.

Firstly, for the purpose of teaching. The allocation of cataloging tasks is based on projects, which is significantly different from general cataloging that is based on video documents. The website can assign the same video to different students for cataloging training, and different project names have different cataloging records, making it easier to compare the quality of video program cataloging by students in the same situation. The database stores metadata based on project names, which can solve the problem of having to store multiple video files due to the large number of students and reduce the storage pressure on teaching websites. On the other hand, teachers can review the cataloging of the same video file, which also facilitates teachers to compare students’ understanding and reduces the workload of review. In the review process, in addition to the general cataloging review opinions, this website’s review has a scoring function, which is in line with teaching habits.

Secondly, for the purpose of production. For the massive task of cataloging historical materials, senior students are also high-quality professional catalogers. With the support of professional teachers, they can provide outsourcing cataloging services for many enterprises. This industry oriented course practice is a very valuable experience for students.

Thirdly For the purpose of teaching and research. Due to the fact that the website relies on a public cloud platform, which is different from the internal network environment of many enterprises, a platform for sharing resources can be easily formed for the cataloging research of some novel program types. Through the cataloging process, research results can be shared with team members. Meanwhile, the website is based on a cloud platform and has an open interface for external use, allowing for flexible experimentation with various AI software and other new technologies.

### 3. website applications

#### 3.1 Course Practice Application

The website serves as a practical training platform for media asset cataloging in the course of “Intelligent Media Content Storage and Management” and undertakes the student cataloging project.

The course catalog material is historical data from a county-level integrated media center. Firstly, establish cataloging accounts for class students through the management end, and then create cataloging tasks for each account. The video files bound to the student cataloging task can be the same or different. If you are a beginner in cataloging, you can assign a video to multiple students. Teachers can compare the cataloging results of different students for the same video and use them as examples for analysis. If you are a student with cataloging experience, assign different video files and provide cataloging outsourcing services for enterprises with the guidance of teachers.

#### 3.2 Application of Intelligent Technology in Cataloging

At present, the application of intelligent technology in media asset cataloging is booming. This website reserves interfaces that can apply third-party software application results to cataloging. This loose coupling mode makes the website for the integration of industry and academia open.

Speech recognition is a common application in cataloging. After speech recognition in video files, subtitle SRT files, LRC files, and text files with timestamps are generated. Due to the significant help of speech in many video files for video content description, keyword extraction, and video retrieval, speech recognition is one of the commonly used intelligent technologies for cataloging.

VideoSrt is an open-source software tool implemented in Golang language that can recognize video and speech and automatically generate subtitle SRT files, LRC files, and text files. It is suitable for business scenarios where subtitles and text files are quickly and batch generated for media (video/audio).

Figure 3 shows a fragment of the LRC file after applying VideoSrt for speech recognition of website videos, and the SRT file also contains the same text content for speech recognition.

```
[00:03.04] Currently
[00:03.55] Eleven provinces and cities along the
[00:08.90] Further strengthen the delineation of
[00:14.07] Ecological Protection Red Line of Yang
[00:17.88] Divided into preliminary delineation
[00:19.44] Optimization
[00:20.46] Three stages of planning and coordinat
[00:22.38] During the delineation process
[00:23.58] Based on the Third National Land Surve
[00:27.19] Ecological function extremely importar
[00:31.85] Inclusion in the ecological protection
```

Figure 3 Speech recognition LRC file fragment

Utilize VideoSrt's jieba library for Chinese word segmentation and implement keyword extraction using jieba.analyse tool module.

### 4. Summary

After the establishment of the media asset cataloging website, a practical training platform for cataloging practice was provided for students in course teaching, which can provide cataloging outsourcing services for enterprises. VideoSrt software was used for speech recognition of cataloging videos, and the recognition results were used for content description and keyword extraction in cataloging, making a beneficial attempt to apply intelligent technology to the website.

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