

# MULTIMEDIA INFORMATION SYSTEMS: A COMPARISON PERSPECTIVE OF SOCIAL WEBSITES

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## ABSTRACT

*In ISs, resource objects like databases are distributed and replicated in order to increase the performance, reliability and availability. In an earlier work, the author extended the earlier existing taxonomy of ISs. In this paper, the authors have revised the taxonomy further by including WIS, SWIS and MMIS. We shall discuss various characteristics of MMIS and the effects of the network on required quality of presentation for MMIS. MMIS input strings provide an efficient means for iconic indexing of the temporal/spatial relations of media streams and semantic objects. Today more information sources become available as MMISs. Hence, the development of abstract semantic models for video, audio, text, graphics and image data became very important. In this paper, we have tabulated a comparison study of a variety of MMISs web sites. It is found that most of the modern web sites use maximum degree of multimedia support.*

*Keywords: Information Systems (ISs), Multimedia Information Systems (MMISs), Web Information Systems (WISs), Social Web Information Systems (SWISs).*

## INTRODUCTION

Presently, we are in the midst of a global information revolution driven by the convergence and proliferation of Information and Communication Technologies. In today's fast pacing world, the way people interact with each other and conduct business is getting updated exponentially and is highlighted by the numerous applications that are being proposed and implemented. In general, Information Systems are software systems that allow users to manage information in different forms. Similarly, in multimedia systems, a variety of information sources such as text, images, audio, video and animations are delivered synchronously or asynchronously via more than one device.

In general, the term "multimedia" refers to electronically delivered combination of media including video, still images, audio, text in such a way that can be accessed interactively.

One of the most important characteristics of multimedia system is that different media are brought together into one single unit and are controlled by a computer. It has a profound effect on how businesses interact with one another. Multimedia libraries will promote affordable

remote learning environments and allow users to author, store and share multimedia documents interactively. [1] The MMIS contain a rich mixture of text, graphics, sound, animations, motion videos, data and other related information. As these systems contain more complex contents, they require highly sophisticated management and may also require delivery with real-time constraints. These multimedia systems also play a key role in education. The main purpose of multimedia in education is to enhance the transfer of information and to simulate the senses and enhance information retention. [3]

MMIS will play a key role in Engineering and technological progress in the future. They are catalysts for new research in a number of areas such as efficient data input devices, high bandwidth digital networks, storage systems with extremely large capacities, data representation and modeling of multimedia data, very large distributed databases, real-time operating systems, computer graphics and animations, and human-computer interaction. The use of multimedia technology can provide cost-effective methods for the management and dissemination of information, and thus increase economic efficiency. Multimedia applications may have

different configurations, information, user-interactions, and quality requirements. These may impose different resource and reliability requirements on the overall system. In addition, each application may require customized system environments and specialized protocols to cater its needs. Multimedia uses a powerful combination of earlier technologies that constitute an extraordinary advance in the capability of machines to perform any task. Some other applications of multimedia information systems include new-on-demand, personalized multimedia news filtering, tele-shopping, consulting and other convenient and financially viable home information services. [2]

MMIS systems consist of multimedia databases, proxy and information servers and clients, and are mainly used for the distribution of multimedia content over the networks. In distributed multimedia applications, the nature of multimedia data that has to be communicated to remote users over computer networks, has introduced a new set of challenges for networking technology.

The significant characteristic of MMIS relative to the traditional textual data is the large bandwidth requirements and temporal constraints. Continuous streams like audio and video consist of smaller presentation units which have to be laid out within strict temporal specifications.

With developments in such areas rapidly becoming a reality, many ambitious multimedia based projects are being pursued by industry, academia, and government. [4]

To build a highly advanced information-based society, sophisticated processing technologies integrating multimedia content are becoming attractive in various service areas including broadcasting, publishing, teaching, medical and healthcare delivery, entertainment, and communications.

The major issues relevant to building these technologies are how to:

- Acquire multimedia content data from the real world.
- Automatically organize and store these obtained data in databases for sharing and reuse.

- Generate and create new attractive multimedia content using the stored data.
- Ensure global synchronization between activated components, and
- Deal with the links between components at transition points during execution.

A MMIS system has four basic characteristics:

- Multimedia systems must be computer controlled.
- Multimedia systems are integrated.
- The information they handle must be represented digitally.
- The interface to the final presentation of media is usually interactive. [5]

Thus, multimedia information systems' development and utilization involves:

- Dynamic multimedia data modeling and intelligent structuring of content based on active, bottom-up, self-organized strategies, and nested transactions. Synthesis of virtual and augmented real environments using large multimedia data for the creation of multimedia content, and their applications to multimedia content processing in mobile computing environments.
- Multimedia systems support both static (e.g., text and graphic)
- Dynamic (e.g., video, audio, and animation) media item types. Each display of a media item in multimedia document has a start time, duration, and finish time. However, the duration of some media items is indeterminate until display time at which a point a combination of factors may affect the actual duration. [6]

The remainder of this paper is organized as follows: In section 1, we described the features of the various MMIS web sites. In section 2, Various applications of MMIS are given. In section 3, a comparison perspective is provided. In section 4, we have given a developed the taxonomy of Information Systems. In Section 5, the authors have concluded the paper.

## 1. Features of Multimedia Information Systems

### 1.1 Multimedia Computer Software

We can classify multimedia software as system software and authoring tools used to develop multimedia applications. System software sets up the communications between the system resources and the application programs. Example of this class is Multimedia Control Interface (MCI) by Microsoft.

### 1.2 Videoconferencing

A Video conference is a set of interactive telecommunication technologies which allow people at different locations to interact via two-way video and audio transmissions simultaneously.

### 1.3 Medical MMIS

Patient information, like images, films or findings, is available at all digital workstations in all departments within a few seconds of generation. Medical information system in the medical area is usually divided into two parts:

- An administrative management information system
- A Medical information system, much medical data is now in digital format. In collaboration with industry, they have developed advanced Informatics systems to make these data more readily available to clinical users by implementing all electronic multimedia patient records, internet-based with PDA technology to provide rapid data access.

### 1.4 Weather MMIS

Weather data collection/web distribution systems is a myriad of tools evolved from a simple program to report and store a weather station data to a complex program which is able to support thousands of unique business, private and public requirements.

### 1.5 Tourist MMIS

- Complex self-service Information System.
- Wide spectrum of provided information.
- Using the latest technologies.
- Information system with multimedia character.
- Unlimited capacity of presented data.

- Unlimited amount of network users.
- Low operation costs

Tourist Information System serves as a worldwide advertisement of tourist services, agencies and tourist activities. It helps attract new clients providing them all information they need to know about traveling in a particular country and it saves money on marketing and advertising costs.

### 1.6 Rama Krishna Math MMIS

The website of Sri Rama Krishna Math, Hyd ([www.rkmath.org](http://www.rkmath.org)) can be considered as an example for Multimedia Information Systems, as the web site consists of full details of Universal Temples, Activities held in the math, about the various publications of the RK's math with full details. They provide about the videos of various occasions held in the RK's math and about various helpful information like Yoga, Meditation classes etc.,

### 1.7 Facebook MMIS

Facebook is an online social networking service. Facebook is a social utility that connects people with friends and others who work, study and live around them. Users must register before using the site, after which they may create a personal profile, add other users as friends, exchange messages, and receive automatic notifications when they update their profile. Additionally, users may join common-interest user groups, organized by workplace, school or college, or other characteristics, and categorize their friends into lists such as "People From Work" or "Close Friends".

### 1.8 Twitter MMIS

Twitter is an online social networking and micro-blogging service that enables users to send and read "tweets", which are text messages limited to 140 characters. Registered users can read and post tweets, but unregistered users can only read them. Users access Twitter through the website interface, SMS, or mobile device app.

### 1.9 LinkedIn MMIS

LinkedIn is a social networking website for people in professional occupations. Users can make connections

with other people they have worked with, post their work experience and skills, look for jobs, and look for workers. The site is available in many languages, including most European languages, Japanese, Korean, Indonesian, and Malay. LinkedIn has more than 200 million members around the world.[7]

## 2. Applications of MMIS

### 2.1 World Wide Web

The World Wide Web is a system of interlinked hypertext documents accessed via the Internet. With a web browser, one can view web pages that may contain text, images, videos, and other multimedia and navigate between them via hyperlinks.

### 2.2 Hypermedia Courseware

Hypermedia Courseware is used as a logical extension of the term hypertext in which graphics, audio, video, plain text and hyperlinks intertwine to create a generally non-linear medium of information. This contrasts with the broader term multimedia, which may be used to describe non-interactive linear presentations as well as hypermedia. It is also related to the field of electronic literature.

### 2.3 Video conferencing

Videoconferencing is a set of telecommunication technologies which allow two or more locations to communicate by simultaneous two-way video and audio transmissions. It has also been called 'visual collaboration' and is a type of groupware.

### 2.4 Video-on-Demand

Video on demand are systems which allow users to select and watch/listen to video or audio content on demand. IPTV (Internet Protocol Television) technology is often used to bring video on demand to televisions and personal computers. TV is a form of video on demand.

### 2.5 Interactive TV

Interactive television is a form of media convergence, adding data services to traditional television technology. Throughout its history, these have included on-demand delivery of content, as well as new uses such as online shopping, banking, and so forth. Interactive TV is a

concrete example of how new information technology can be integrated vertically (into established technologies and commercial structures) rather than laterally (creating new production opportunities outside of existing commercial structures, e.g. the world wide web).

### 2.6 Groupware

Software that supports multiple users working on related tasks in local and remote networks. Also called "collaborative software," groupware is an evolving concept that is more than just a multiuser software which allows access to the same data. Groupware provides a mechanism that helps users coordinate and keep track of ongoing projects together.

### 2.7 Home shopping

Shopping carried out from one's own home by ordering goods advertised in a catalogue, on television, or over the Internet.

### 2.8 Virtual reality

Virtual reality (VR) is a computer-simulated environment that can simulate physical presence in places in the real world or imagined worlds. Most of the current virtual reality environments are primarily visual experiences, displayed either on a computer screen or through special stereoscopic displays, but some simulations include additional sensory information, such as sound through speakers or headphones.

### 2.9 Digital video editing and production systems

Video Production is also known as videography.

Website	Text	Images	Audios	Videos	Graphics	Degree of MMIS Support
Tourism MMIS <a href="http://www.aptdc.gov.in">http://www.aptdc.gov.in</a>	Yes	Yes	Yes	Yes	Yes	5
Ramakrishna Math MMIS <a href="http://rkmath.org/">http://rkmath.org/</a>	Yes	Yes	Yes	Yes	Yes	5
Weather MMIS <a href="http://www.imd.gov.in/">http://www.imd.gov.in/</a>	Yes	Yes	No	No	No	3
Health MMIS <a href="http://www.apollomunichrestore.com/">http://www.apollomunichrestore.com/</a>	Yes	Yes	Yes	Yes	Yes	5
Social Networking MMIS <a href="https://www.facebook.com/">https://www.facebook.com/</a>	Yes	Yes	Yes	Yes	Yes	5
Video Conferencing MMIS <a href="http://www.skype.com/en/">http://www.skype.com/en/</a>	Yes	Yes	Yes	Yes	Yes	5
Facebook <a href="https://www.facebook.com/">https://www.facebook.com/</a>	Yes	Yes	Yes	Yes	Yes	5
Twitter <a href="https://twitter.com/">https://twitter.com/</a>	Yes	Yes	Yes	Yes	Yes	5
LinkedIn <a href="https://in.linkedin.com/">https://in.linkedin.com/</a>	Yes	Yes	Yes	Yes	Yes	5

Table 1. Comparison features of Multimedia Social Websites.

Technically, it is the process of creating video by capturing moving images, and creating combinations of parts of this video in live production and post-production (video editing). In most cases, the captured video will be recorded on electronic media such as video tape, hard disk, or solid state storage, but it might only be distributed electronically without being recorded. It is the equivalent of filmmaking, but with images recorded electronically instead of film stock.

### 3. Multimedia database systems

A multimedia database management system (MM-DBMS) is a framework that manages different types of data potentially represented in a wide diversity of formats on a wide array of media sources [8]. Table 1 presents the comparison features of Multimedia Social Websites.

### 4. Taxonomy of Information Systems (revised) [9](Figure 2)

- OLIS => Operational Level Information Systems
- TPS => Transaction Processing Systems
- KLIS => Knowledge Level Information Systems
- OAS => Office Automation Systems
- KWS => Knowledge Work Systems
- SLIS => Strategic Level Information Systems
- ESS/EIS => Executive/Support IS's
- MIS => Mobile Information Systems
- MLIS => Management Level Information Systems
- MIS => Management IS's
- HRIS => Human Resource IS's
- DSS => Decision Support IS's
- BI IS => Business Intelligence IS's
- DMDW => Data Mining and Data Warehousing IS's
- KDDIS => Knowledge Discovery in Database IS's
- CIS => Cognitive Information Systems

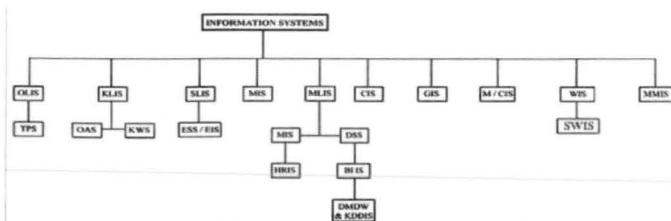


Figure 2. Taxonomy of Information Systems

- GIS => Geographical Information Systems
- M/CIS => Medical / Clinical Information Systems
- WIS => Web Information Systems
- SWIS => Social Web Information Systems
- MMIS => Multi Media Information Systems

### Conclusions

Current technology trends suggest that the Internet's multimedia ISs capabilities are increasing at a phenomenal pace. The presence of a committed operation of MMISs invoked in its trace means all operations of the transaction commits and preclude the occurrence of its abort in its trace. This paper explains about the various characteristics of MMISs compared in few websites of MMIS. This information is shown in a tabular form. This is particularly important for those users who visit the MMIS websites regularly. Even we have shown where MMISs are more used by a user. The results of our investigation shows which MMISs websites have all the characteristics of a MMIS.

We are currently investigating, in Cognitive Information Systems to relate with MMIS. We have extended the taxonomy diagram of ISs in which we have included new "MMIS", "Social Web IS" etc.

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