# Multimedia-based Information System for Student Lecture Schedules and Room Usage in Integrated Lecture Buildings by using Android TV

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# ABSTRACT

The Manado State Polytechnic Integrated Lecture Building (GKT) is a 7-story building which is used as a place for students to study in 6 departments. On the ground floor of this building there is Café Polimdo which sells snacks, soft drinks and several other types of food. Its position is right next to the Busines Center which sells various types of souvenirs and souvenirs typical of Manado including stock exchange trading in it. At both ends of the ground floor there are two theater rooms with a capacity of 100 people each. Meanwhile, the remaining 6 floors are occupied by the 6 departments at the Manado State Polytechnic. Each floor consists of around 10 classrooms complete with toilet facilities for all floors. In managing the use of rooms in this building, it is currently still used based on the schedule of each department. The problem is that apart from the class concerned, building users do not know which rooms are empty and which classes there are, including the use of the theater room. Therefore, it is very important for this building to be provided with monitoring facilities in the form of a large LED TV which can display lecture schedules and room usage complete with hours, classes, courses and teaching lecturers. Therefore, this research will use multimedia technology which is a combination of images, video and audio which will guide visitors directly to their destination, namely which floor and which room. Later, this system will display the schedule and room usage on the Android TV monitor along with sound when there is a class change or break. With this system, lecture activities in this integrated lecture building will be more organized and exclusive with the use of multimedia technology.

# **Keywords**

Completed Lecture Building, Student Lecture Schedule, Rooms, Multimedia

# 1. INTRODUCTION

One of the digital learning media that is currently available is multimedia learning using an Android-based Smart TV (Android TV) which can be directly connected to the internet. Smart TV has changed the old TV system by providing processing capabilities and internet connectivity, more interactive, can interact with viewers or users. Smart TV is a digital TV device that can be connected to the internet, so that TV contents can access the internet. However, the content is still limited compared to Android TV. Android TV is a Smart TV that is considered more sophisticated and complete because it has content that contains more applications on the internet, for example the virtual Google Assistant, Google Play Store and other applications available on Android TV. Android.

The TV installs a microphone on the TV remote which can be

used to perform searches on the Google search engine by voice. Apart from that, Android TV provides a more complete library as well as continuous firmware and application updates. The use of smart TV as a learning medium provides an authentic opportunity for students to learn using real world media. Besides that, will also make students aware of the everchanging world of electronic communications, and enable students to have a better conception of the material, which can further build students to be fortunate in the future. By using a smart TV, students can watch movies, listen to music, or work. This means that Smart TVs, including Android TVs connected to the internet and laptops, can enrich learning materials in various forms, not only human-based, but also print-based, visual, audio-visual, computer-based, and even a combination of all of these can be done. Lack of learning information sources can hinder the achievement of learning process goals, for this reason a strategy is needed. Combining Smart TV (Android), computer and internet media can implement complete multimedia learning materials. The complete types of multimedia are interactive, hyperactive and linear.

In this research, students will use an Android TV to display the lecture schedule monitor display for each classroom along with class hours and lecturers who teach. In the Manado State Polytechnic integrated lecture building, a multimedia-based system will be created which will display the lecture schedule and use of the building along with the lecturers teaching. For changing hours, audio will be provided as well as classes in progress. Through this research, an integrated system will be created that will display all student activities in this integrated lecture building.their needs..

# RESEARCH LITERATURE OLTP (Online Transaction Processing)

OLTP is a form of data processing where each transaction is processed immediately, without delay in collecting transactions into batches. It has the characteristics of a large amount of data but the transactions carried out are quite simple such as insert, update, and delete. The main thing that becomes the concern of the OLTP system is to perform queries quickly and easily to be repaired and accessible. Online Transaction Processing (OLTP), which is a database concept that contains data processing to record daily transactions. Such as: daily sales transactions.

The characteristics of OLTP:

- Data access is read-write insert, update, delete
- The orientation of the data in the application is the data taken from the business process

- Character data is not important
- Consistent data activity.

# 2.2 OLAP (Online Analytical Processing)

OLAP is based on a concept called a cube. The cube in OLAP is a multidimensional data structure (actual or virtual) that allows fast data analysis. It can also be defined as the ability to efficiently manipulate and analyze data from multiple perspectives. The arrangement of data into cubes aims to overcome the limitations of relational databases. Relational databases are not suitable for fast and close analysis of large amounts of data. Instead, they are better suited for manipulating records (adding, deleting, and updating data) that represent a series of transactions. Online Analytical Processing (OLAP), which is a database concept where data processing is used to analyze data.

Such as sales trends and age. OLAP features:

- Read-only
- Oriented on business subjects
- Data integrated
- Data is historical
- Uncertain data activity

# 2.3 ETL (Extract Transform Load)

Data extraction is the process by which data is retrieved or extracted from various operational systems, either using queries, or ETL applications. There are several data extraction functions, namely:

- 1. Automatic extraction of data from source applications.
- 2. Filtering or selecting the extracted data.
- 3. Sending data from various application platforms to data sources.
- 4. Changes in the data layout format from the original format.
- 5. Storage in temporary files for merging with extraction results from other sources.

#### **2.4 Data Transformation**

Data transformation is a process where the raw data extracted is filtered and changed according to the prevailing business rules. The steps in data transformation are as follows:

- 1. Mapping the input data from the original data schema to the data warehouse schema.
- 2. Converting data types or data formats.
- 3. Cleaning and removing duplication and data errors.
- 4. Calculation of derivative or initial values.
- 5. Calculation of aggregate or summary values.
- 6. Checking data reference integrity.
- 7. Filling empty values with default values.
- 8. Merging data.

The last process that needs to be done is the process of loading the data obtained from the transformation into the data warehouse. The way to load data is to run SQL scripts periodically.

### 3. METHOD

The research stages that will be carried out include:

- 1. Data collection.
- 2. System analysis
- 3. Information Systems Design
- 4. Creation of a Multimedia Based System
- 5. Android TV Application Creation
- 6. System testing

As the result there are 4 users in this website application .: .

- 1. Admin Admin will provide the users and information
- Study Program The head of Study Program will provide the Schedule Information to Admin
- 3. Student Affair Department This user will provide Student Works and activity as a video and foto to Admin
- 4. Top Leaders The top leader will give the schedule of theater and any activity at GKT to Admin

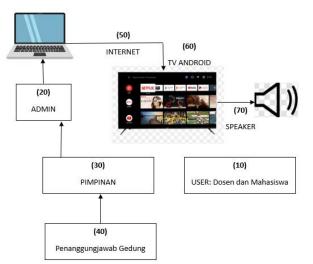


Figure 1. The Block Diagram System

The algorithm of this system that how the system manage the schedule with the availability of the rooms. All of the empty room can be used by the lecturer by checking it first by the TVC Monitor then go to the admin for booking the room. The system will display all of the empty rooms of the certain time and duration automatically. The system will display all of the scheduled rooms with the subject and play the sound of the script automatically. Below is the flow chart of system algorithm:

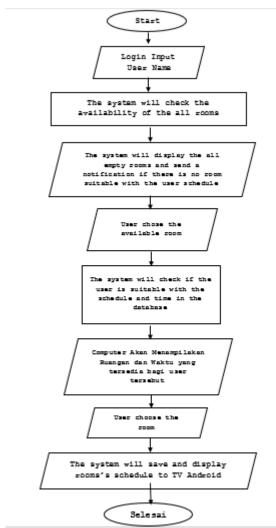


Figure 2. The Algorithm of the system

#### 4. RESULT



Figure 3. The Display of Groud Floor Room Activity

The results of this research are internet services in the Gedung Kuliah Terapadu of Manado State Polytechnic for students, lecturers and staff to be able to watch the teaching and learning process so that all reference data collection activities, practicums and even course assignments can be carried out in areas. The following are the results of the creators of this system:.



Figure 4. The Display of 1st Floor Room Activity

In the 1<sup>st</sup> floor the rooms is all for the lecturer activities of Tourism Department. So all of the schedule is displayed as realtime for the the subjects at that time. After the time for a subject is over, the room activity will change automatically. The speaker will play the sound continually based on the screen of android TV.

	6 <sup>th</sup> F	loor	
	Septembe	r 21, 2023	
Ruang 6.1	Ruang 6.2	Ruang 6.3	Ruang 6.4
English 1	Mekanika 1	Mekanika Tanah	Struktur Kayu
Yolanda Lagarense	Seska Nikolaas	Ferry Sondakh	A. Yani Abas
Ruang 6.5	Ruang 6.6	Ruang 6.7	Ruang 6.8
Pancasila	Mekanika 2	Struktur 1	Matematika 1
Nasir Katong	Vicky Assa	Jeanly Rangkang	Carter Kandow
Ruang 6.9	Ruang 6.10	Ruang 6.11	Ruang 6.12
Calculus 1	Aplikasi Komputer	Struktur Gempa	Struktur Jalan
Evert Slat	Jhon Harahap	Tedi Takaendengan	Efraty Kandiyoh

Figure 5. The Display of 6th Floor Room Activity

The system will automatically display the schedule for every rooms. If there is an empty room in certain time, it will not be displayed to the screen. So the lecturer can take the plaace and that time by checking the duration to the admin. The empty rooms can be used by order it from the admin. The system can check in automatically and display the empty room for a certain duration. So the lecturer can use the empty room temporary.

#### 5. CONCLUSSION

This application can help lecturers and students find out which lecturer is teaching and the room they are using. This application can display all teaching and learning activities in the Integrated Lecture Building. Adding a display of student activities and information on other campus activities will make this application more useful. This application would be even better if it was equipped with sound

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