Multimedia Management Platform

Case Providing Department: Management Information Technology and System Office

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1. Background

We utilized a no-code platform to build a campus multimedia maintenance management platform that integrates equipment information management, daily inspections, and fault reporting. This platform has enabled the digitalization, streamlining, and intelligentization of maintenance work. It significantly improves management efficiency and service experience.

Against the backdrop of the comprehensive advancement of the Education Informatization 2.0 strategy, our university's multimedia teaching infrastructure has evolved into a diversified teaching space system that covers both northern and southern campuses, including standard classrooms, smart classrooms, multifunctional conference rooms, and specialized laboratories. With the implementation of campus expansion projects, the scale of operation and maintenance management has grown exponentially — currently, there are 328 multimedia teaching spaces requiring maintenance, encompassing over

2,100 devices across 12 categories, including projection systems, intelligent control systems, and audio-visual terminals. The annual volume of operation and maintenance work orders has exceeded 5,000.

At the operational maintenance management level, the current model faces three major challenges:

First, at the equipment asset level, issues such as delayed ledger updates and opaque maintenance cycles persist. Traditional Excel spreadsheets are inadequate for achieving full lifecycle management of devices.

Second, in terms of human resource allocation, the hybrid team—comprising two full-time engineers and five outsourced technicians—lacks a visual scheduling system and an intelligent work order distribution mechanism. This leads to redundant inspection tasks and increases operational maintenance costs.

Third, service response processes suffer from information silos. Critical procedures, such as fault reporting and handling tracking, have yet to form a digital closed loop, which adversely affects the overall efficiency of multimedia maintenance and services.

In alignment with our university's "Smart Campus" initiative, we propose the development of an integrated multimedia maintenance management system that combines device management, work order dispatch, and data analysis. This system will deliver three core upgrades:

- Digital twin archives for equipment

- Optimized human resource allocation
- The establishment of a maintenance indicator system

Ultimately, this will result in a quantifiable, traceable, and predictable operation maintenance management system, providing round-the-clock technical support for the university’s educational activities.

2. Solutions

We adopted a zero-code development approach, utilizing drag-and-drop components and visual configuration, to rapidly build the "Multimedia Management Platform."

Core functional modules:

- **Basic data information on teaching spaces and equipment**
    - **Equipment Archives:** Create a digital ID for each device, recording key information such as device name, model, serial number, and MAC address.
    - **Room-Device Association:** Build a relational map between classrooms and equipment, enabling one-click access to a complete list and detailed information of all devices installed in any classroom

- Inspection Management for Multimedia Equipment in Classrooms and Meeting Rooms
    - Digitalized Inspection Checklists: Convert inspection items (e.g., projector brightness, computer startup, audio performance, etc.) into standardized online forms.
    - Mobile Execution: Maintenance personnel can quickly complete inspections via mobile devices to check statuses, record anomalies, and upload photos.
    - Automated Recording and Archiving: The time, personnel, and results of each inspection are automatically saved to generate traceable electronic records.
- Summary of Daily Maintenance Tasks
    - Standardized Recording of Routine Tasks: Daily handled tasks are recorded by work type, maintenance personnel, repair request source, time, and other details, enabling maintenance staff to document daily operations conveniently and comprehensively.
    - Automatic Statistics and Chart Generation: Based on maintenance records, generate charts highlighting buildings or specific classrooms with frequent issues. These visualizations provide strong

support for equipment inspections and upgrades, helping to promptly adjust maintenance priorities.

- **Activity Information Compilation**: Aggregate university activity information, displaying an IT activity support timeline.

- **Closed-loop Repair Request Process**

- **Multi-channel Request Submission:** When staff discover equipment malfunctions, they can easily submit a repair request through the platform’s website or mobile app, describing the issue and uploading photos/videos as needed.

- **Automated Work Order Dispatch**: Repair requests automatically trigger notifications and are assigned to the appropriate maintenance personnel based on predefined rules.

- **End-to-end Progress** Tracking: Requesters can track the real-time status of their tickets—from "pending" and "repairing" to "complete.

- **Data Dashboard**

Daily, weekly, and monthly reports on classroom and meeting room management are available in real-time. Data analysis via the dashboard helps improve subsequent operations.

- Real-time operation overview: Displays key metrics such as global data, classroom information, daily work order volume, and inspection completion status.
- Equipment fault density and work order distribution mapped by campus/building.
- Rankings of classrooms with frequently malfunctioning multimedia equipment.

3. Outcomes and Benefits

Since the platform was launched, it has significantly enhanced the university's multimedia maintenance:

- **Improved Management Efficiency**: Information retrieval has shifted from "searching through piles of documents" to "second-level access." Equipment record accuracy has reached 100%, and management efficiency has increased by approximately 60%.
- **Transparent Maintenance Process**: The entire repair request process is now online, reducing communication costs by about 50% and greatly improving faculty satisfaction. The average response and resolution time for repairs has been shortened by nearly 40%.

- **Data-Driven Decision-Making**: Using the data dashboard, managers can clearly monitor equipment health status and identify frequent failure points. This enables optimized inspection strategies and provides precise data support for future equipment procurement and upgrade plans.

- **Cost Reduction**: Through preventive inspections and rapid repairs, the service life of equipment has been extended, and class disruptions due to malfunctions have been reduced, indirectly lowering operation, maintenance, and teaching costs.

4. Next Steps

To further enhance the value of the platform, we plan to advance the following initiatives based on the current system:

1) **System Integration and Data Connectivity**: Explore integration with other existing campus systems, such as the microphone control platform, microphone management system, and class scheduling system, to enable data synergy and further improve automation.

2) **Intelligent Early Warning Upgrade: Leverage accumulated big data from inspections and repair requests to build equipment failure prediction models, shifting from "reactive maintenance" to**

"proactive alerts" to prevent issues before they occur.

3) **Enhanced Mobile Features:** Optimize the mobile user experience and develop more convenient functions, such as "Quick Repair Request via QR Code" (with codes attached to equipment) and "QR Code Inspection."