# Practice Case of ESB Platform Empowering Digital Transformation of CSA

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## 1. Background

As the core department for student management services, the Center of Student Affairs (CSA) relies on scattered data from systems like academic affairs, careers, libraries, LMO, and Wifi. However, the original model had four key pain points:

- **Severe Data Silos:** CSA sub-units (e.g., SCC, Careers, SDAC, Onestop) had to apply for data from over 10 independent systems (academic SITS, library Learning Mall, CMO gate, etc.) one by one, leading to high cross-departmental communication costs;
- **Cumbersome Application** Process: For the Ant-X student big data platform, manual application for 52 raw tables required approvals from multiple system administrators and Heads of Department (HoD), taking weeks or even months;
- **Heavy Preprocessing Workload**: Business teams had to clean and integrate multi-source data (e.g., abnormal period activity statistics) manually,

calculating activity in normal/abnormal periods—time-consuming and error-prone;

- **Weak Security Management:** Inconsistent data security standards across teams, and downstream applicants had vague awareness of field security levels, posing potential risks.

## 2. Solutions

The ESB platform addressed pain points via one-stop service + intelligent preprocessing + process optimization:

**(1) One-stop Data Application Service**

CSA data officer could complete full-process applications on the platform with transparent, traceable approvals (finished within 1 week); security levels of fields were visible in real-time during application, enhancing compliance for sensitive data.

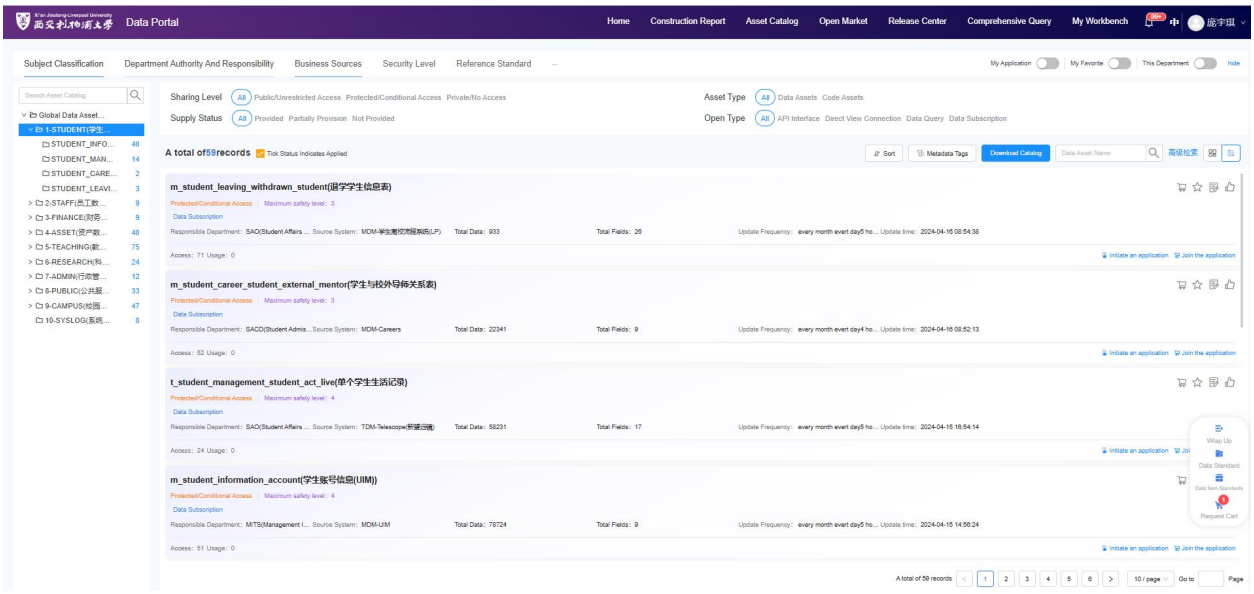


*Figure 1 One-stop Data Application*

## (2) Intelligent Data Preprocessing

Based on business needs, the platform standardized data:

**Abnormal Period Statistics:** Automatically generated structured activity reports for students' daily activity in normal periods (6:00-1:00 next day) and abnormal periods (1:00-5:00);

**Multi-source Data Integration:** Preprocessed 52 raw tables for Ant-X into 12 aggregation tables (e.g., comprehensive activity table) +12 detail tables (e.g., library usage detail table), directly supporting model training.

## (3) Approval Process Optimization

Built-in permission rules dynamically matched approval nodes based on data security levels, significantly shortening the application cycle.

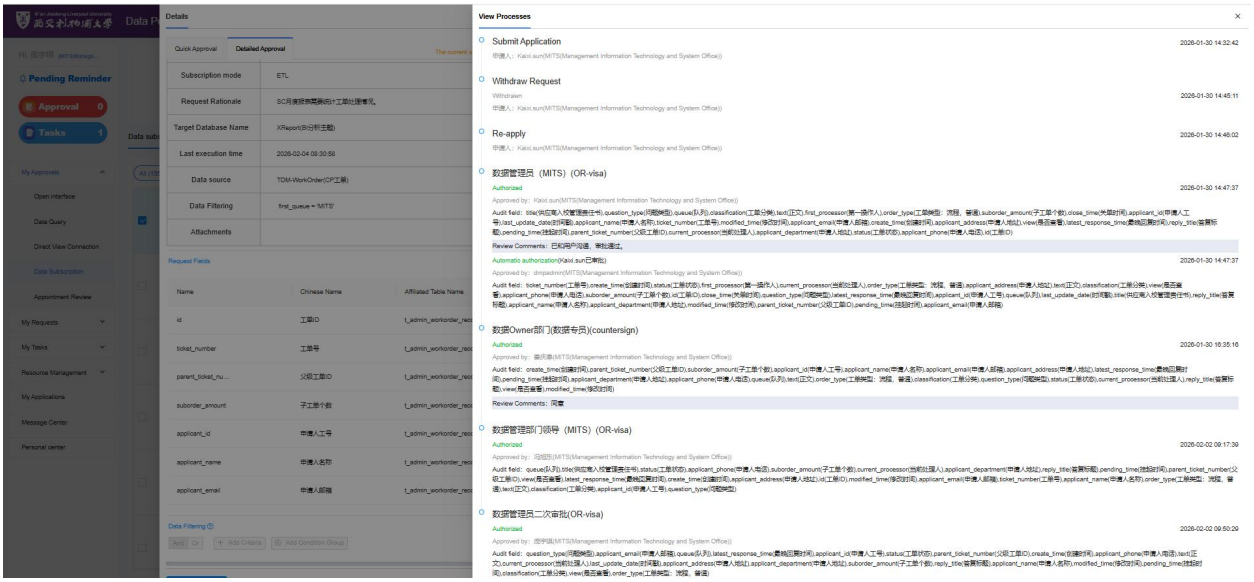


*Figure 2 Efficient and Transparent Approval Process*

## 3. Outcomes and Benefits

### (1) Significant Efficiency Improvement

- **Application Cycle Reduction:** Data application for new report applications was cut from weeks to within 1 week;
- **Preprocessing Cost Reduction:** The platform handled preprocessing of 52 raw tables for Ant-X, eliminating manual cleaning by business teams and saving substantial labor costs.

### (2) Enhanced Business Support

- **Application Delivery**: Supported the launch of 5 applications including SAO Mental Health Dashboard, Careers Office Off-campus Mentor Report, Ant-X Activity Report;


*Figure 3 List of CSA Middle-Platform Applications*

- **Model Data Guarantee:** 24 preprocessed tables (12 aggregation +12 detail) provided core data for Ant-X low activity warning and psychological risk warning models;
- **DA Work Optimization:** The Telescope platform obtained cross-system interfaces via the ESB platform to grasp students' academic status in real-time; for psychological crisis students meeting confidential disclosure conditions, counselors could timely access consultant records and suggestions, supporting students' healthy development.

### (3) Data Quality Assurance

The platform unified data standards, eliminated data inconsistency across systems, and significantly improved the precision and accuracy of analyses like student activity warning.