K16 SOLUTIONS

Revolutionizing Data Governance and Management with Scaffold DataX

A Comprehensive Guide to Scaffold DataX

Introduction

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In the evolving landscape of educational technology, managing and governing vast amounts of data has become increasingly complex. Institutions face challenges with aggregating data from various systems such as Learning Management Systems (LMS), Student Information Systems (SIS), Customer Relationship Management (CRM) systems, Enterprise Resource Planning (ERP) systems, as well as other various point solutions. These challenges include ensuring data quality, reducing operational costs, and making informed decisions based on comprehensive data insights.

K16 Solutions addresses these challenges with its innovative product, Scaffold DataX. This comprehensive guide delves into Scaffold DataX's functionalities, benefits, and transformative impact on data governance and management in educational institutions.

The Landscape of Data Management in Education

1.1 The Complexity of Educational Data

Educational institutions manage a vast array of data types, from academic records and administrative information to engagement metrics and financial data. This data is typically dispersed across various platforms and systems, creating silos that hinder comprehensive data analysis and decision-making.

1.2 Common Challenges

Data Aggregation & Integration: Aggregating and integrating data from disparate systems like LMS, SIS, CRM, and ERP, and building the necessary ETL pipelines is a complex process that often demands significant IT resources.

Data Quality and Trust: Ensuring the data is accurate, up-to-date, and reliable is a constant challenge.
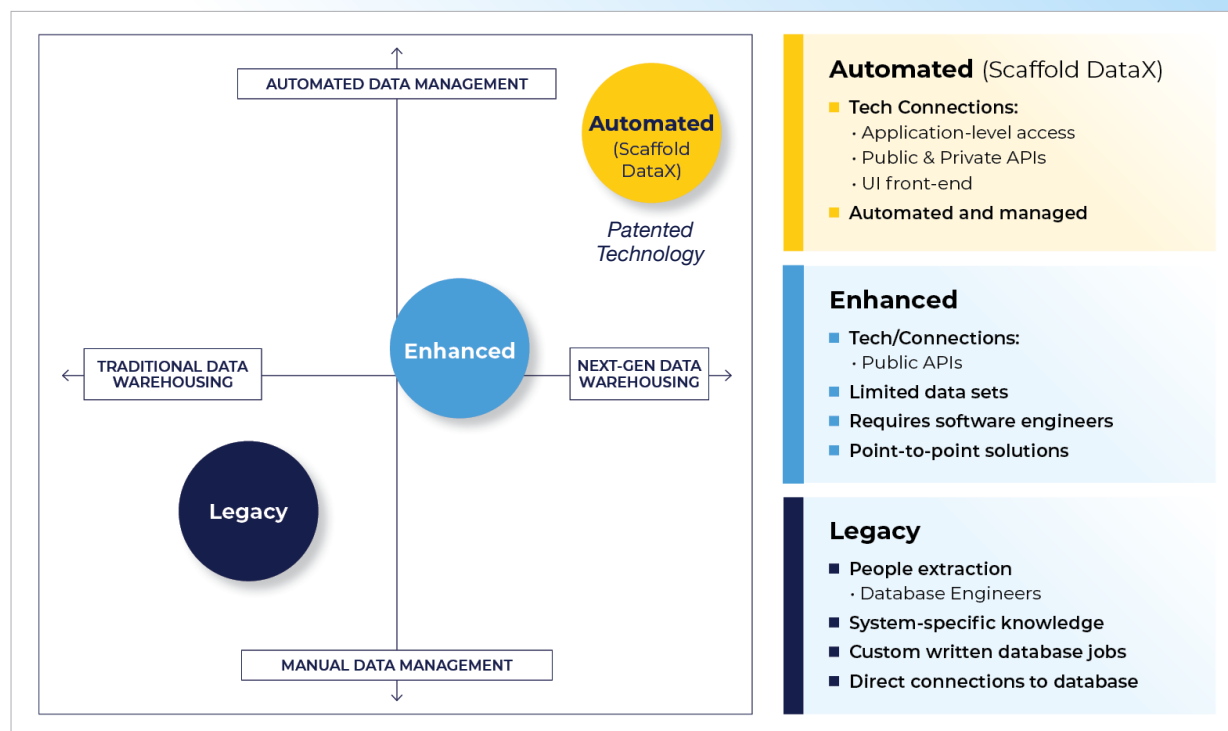

Figure 1. Data Warehouse Journey

Automated (Scaffold DataX)
- Tech Connections:
  - Application-level access
  - Public & Private APIs
  - UI front-end
- Automated and managed

Enhanced
- Tech/Connections:
  - Public APIs
- Limited data sets
- Requires software engineers
- Point-to-point solutions

Legacy
- People extraction
  - Database Engineers
- System-specific knowledge
- Custom written database jobs
- Direct connections to database

Operational Costs: The financial burden of building, maintaining and operating a data warehouse, including costs associated with hardware, software, and personnel, can be significant and often unpredictable.

Timely Insights: Institutions need timely access to data to make informed decisions, but manual data processing and time-consuming infrastructure maintenance delays this access.

Data Accessibility: Ensuring that all relevant stakeholders can access the data they need when they need it can be difficult due to system limitations and a lack of centralized data management.

Data Warehouse Management: Managing a data warehouse requires continuous monitoring, updating, and optimizing, which can be resource-intensive and require specialized expertise.

Introduction to Scaffold DataX

2.1 About K16 Solutions

Founded by educators, K16 Solutions specializes in data services for educational institutions. The company has a rich history of providing data migration, automation, and archiving solutions, making it a trusted partner for many institutions worldwide.

2.2 Overview of Scaffold DataX

Scaffold DataX is a powerful SaaS-based solution that automates your data warehouse and seamlessly extracts and aggregates data across all of your systems, starting with the LMS, SIS, CRM, and ERP. With Scaffold DataX, institutions can stop spending valuable time and using multiple tools to manage a data warehouse, and move directly to analyzing and reporting on their enterprise data.

"The need for a scalable, automated solution to track student engagement and attendance is not unique to San Diego State—it's a challenge faced by institutions across the entire California State University system. With over 480,000 students across our 23 campuses, ensuring accurate and efficient attendance tracking is critical for student success, compliance, and institutional decision-making. SDSU's implementation of Scaffold DataX is an important step forward, demonstrating the kind of innovation that could benefit the broader CSU system as we continue to enhance our data strategies to support student outcomes."

-Assistant Vice Chancellor for Academic Technology Services, Leslie Kennedy of the California State University System.

Core Features of Scaffold DataX

3.1 Automated Data Extraction

Scaffold DataX uses application-level access with a patented, multi-step process to extract data from public APIs, private APIs, and web front-ends. This approach ensures the most complete and accurate data retrieval, eliminating the institution's need for direct database access, manual coding, and building data integrations.

3.2 Neutral Data Model

Data from various sources are aggregated into a neutral data model and stored in a data warehouse. This model supports seamless integration with Business Intelligence (BI) tools, and next generation AI agents, facilitating comprehensive data analysis. By standardizing and centralizing disparate data, institutions gain faster access to accurate, actionable insights—dramatically simplifying reporting cycles and strengthening analytics capabilities across departments.

3.3 Embedded Reporting and Analytics

Scaffold DataX includes built-in reporting through Sigma Computing, with customizable dashboards that deliver real-time insights. Users can easily create and modify reports to meet specific needs, supporting timely and informed decision-making. For additional flexibility, institutions can also connect Tableau, Power BI, Looker, and other BI tools directly to the data model.

3.4 Blueprint Library

The Blueprint Library offers a few ready-made views for analytics, simplifying the analysis of integrated data sets. Users can create, copy, and edit Blueprints to tailor data views to their specific reporting requirements. Blueprints can also be leveraged to provide snapshots of historical data for point-in-time comparisons.

3.5 Interactive Documentation

Interactive documentation includes a data catalog, data lineage graphs, an Entity Relationship Diagram (ERD), and a business glossary to help users understand data flows and relationships. This transparency enhances data governance, exploration, and quality control.
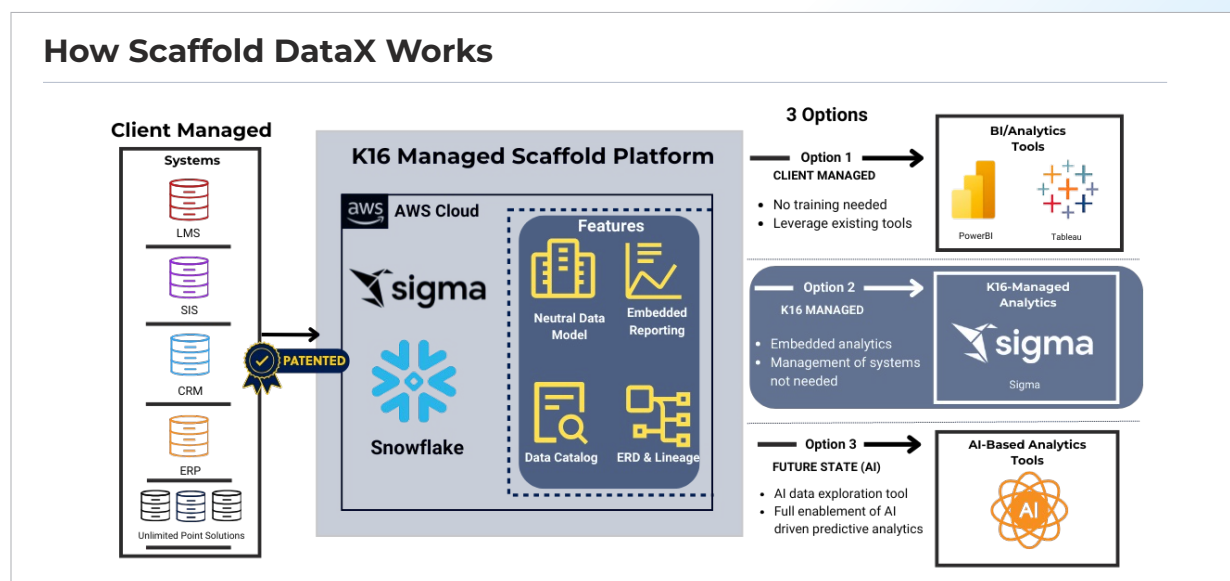

Figure 2. How Scaffold DataX Works

Benefits of Scaffold DataX

4.1 Time and Cost Efficiency

By automating data extraction, aggregation, and preparation for reporting at scale, Scaffold DataX significantly reduces the time and resources required for data management. The consistent cost structure and predictability of a SaaS solution allows institutions to budget with detailed precision across multiple years, ensuring financial stability. Reallocating IT resources to other strategic tasks further reduces overall operational costs due to this predictability.

4.2 Enhanced Data Quality and Trust

Scaffold DataX's automated processes and patented technology ensure high-quality, accurate data. This reliability is crucial for maintaining trust in the data used for strategic planning and decision-making.

4.3 Scalability and Flexibility

Scaffold DataX supports multiple data sources (e.g. LMS, SIS, CRM, ERP, legacy systems, flat files, and more) and integrates seamlessly with existing BI tools. T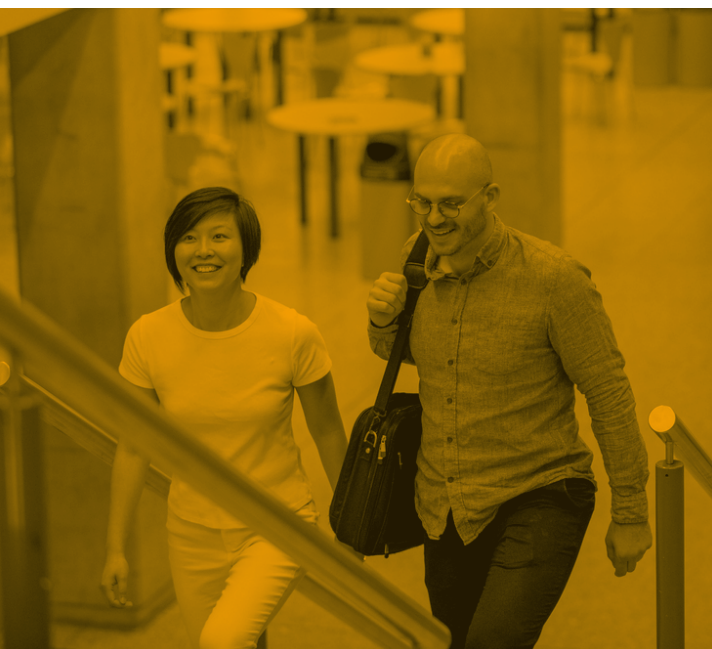his scalability and flexibility make it suitable for institutions of all sizes, allowing them to grow and adapt their data strategies as needed.

4.4 Comprehensive Data Insights

With its integrated data model and advanced reporting features, Scaffold DataX provides a holistic view of an institution's data. This comprehensive perspective enables better decision-making across all levels of the institution.

4.5 Simplified Data Governance

Scaffold DataX's interactive documentation and automated processes streamline data governance. Institutions can ensure compliance with data regulations and standards, reducing the risk of data breaches and other governance issues.

> "Scaffold DataX perfectly aligns with our mission to leverage technology to enhance our academic offerings and administrative efficiency. We are confident that the significant improvements in our data handling capabilities will lead to better outcomes across our student, staff, and faculty stakeholder groups."
>
> - Rick Gallot, President of the University of Louisiana System

Use Cases of Scaffold DataX

5.1 Student Success Analysis

By integrating data from LMS, SIS, and other potential applications, Scaffold DataX allows institutions to track student performance and demographics. This information is vital for retention strategies and intervention programs aimed at improving student outcomes.

5.2 Operational Efficiency

Scaffold DataX streamlines data warehouse operations, allowing institutions to focus on deriving insights rather than managing infrastructure. This shift enhances operational efficiency and supports strategic initiatives.

5.3 Financial Planning and Analysis

With accurate and timely data, institutions can make better financial decisions. Scaffold DataX supports financial planning and analysis by providing comprehensive data insights, helping institutions manage budgets and resources more effectively.

De-Siloing Campus Data Systems to More Fully Support the 'Whole Student'

Siloed data systems are an ongoing challenge for every institution, with valuable information trapped within dozens of isolated sources and unavailable to improve operational efficiency and student success.

Institutional Strategic Goal Impact

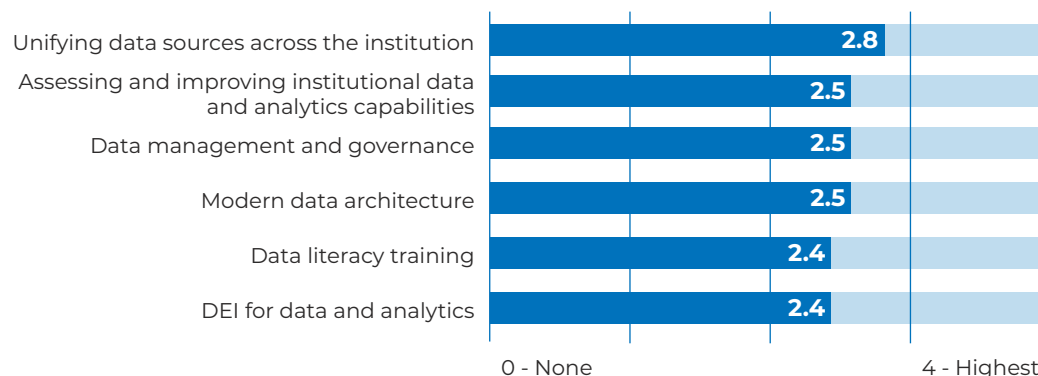|	
Unifying data sources across the institution	2.8
Assessing and improving institutional data and analytics capabilities	2.5
Data management and governance	2.5
Modern data architecture	2.5
Data literacy training	2.4
DEI for data and analytics	2.4

0 - None   4 - Highest

Figure 3. Panelists' Ranking of Institutional Strategic Goal Impact for Each Key Technology or Practice
Source - 2022 EDUCAUSE Horizon Report: Data And Analytics Edition

5.4 Academic Program Evaluation

Scaffold DataX enables institutions to evaluate academic programs by integrating data from various sources. This holistic view supports curriculum development and program assessment, ensuring academic excellence.

5.5 Compliance and Reporting

Scaffold DataX simplifies compliance and reporting by providing accurate and up-to-date data. Institutions can easily generate reports required for accreditation and regulatory compliance, reducing administrative burdens.

5.6 Workforce Forecasting

Scaffold DataX reduces the need for a large team of database engineers and other specialized staff. This automation allows schools to predict their workforce requirements more accurately, focusing on strategic roles rather than technical maintenance.

5.7 Data Warehouse Automation and Customization

Scaffold DataX automates your existing data warehouse or offers a fully managed, customized solution, improving data quality and efficiency, so you can focus on strategic decision-making with data insights.

Technical Specifications and Integration

6.1 Data Integration Framework

Scaffold DataX's patented technology supports a robust data integration framework that connects with various systems, including LMS, SIS, CRM, and ERP. This framework ensures comprehensive data extraction and aggregation by using a combination of public and private APIs along with front-end technologies.

6.2 Security and Compliance

Scaffold DataX prioritizes security. The platform complies with industry standards and regulations, ensuring data protection and privacy. Features like data masking and data encryption in flight and at rest, enhance security and compliance efforts. K16 Solutions has obtained both the coveted SOC 2 Type 2 recognition and ISO 27001 certification. Security and compliance documentation is available and up-to-date in K16's trust portal.

6.3 Scalability and Performance

Built on Snowflake and hosted on AWS, Scaffold DataX offers scalability and high performance. The platform can handle large volumes of data, ensuring that institutions can scale their data management efforts as needed.

6.4 User Interface and Experience

Scaffold DataX features an intuitive user interface that simplifies data management tasks. Users can easily navigate the platform, create reports, and access data insights without extensive technical knowledge.
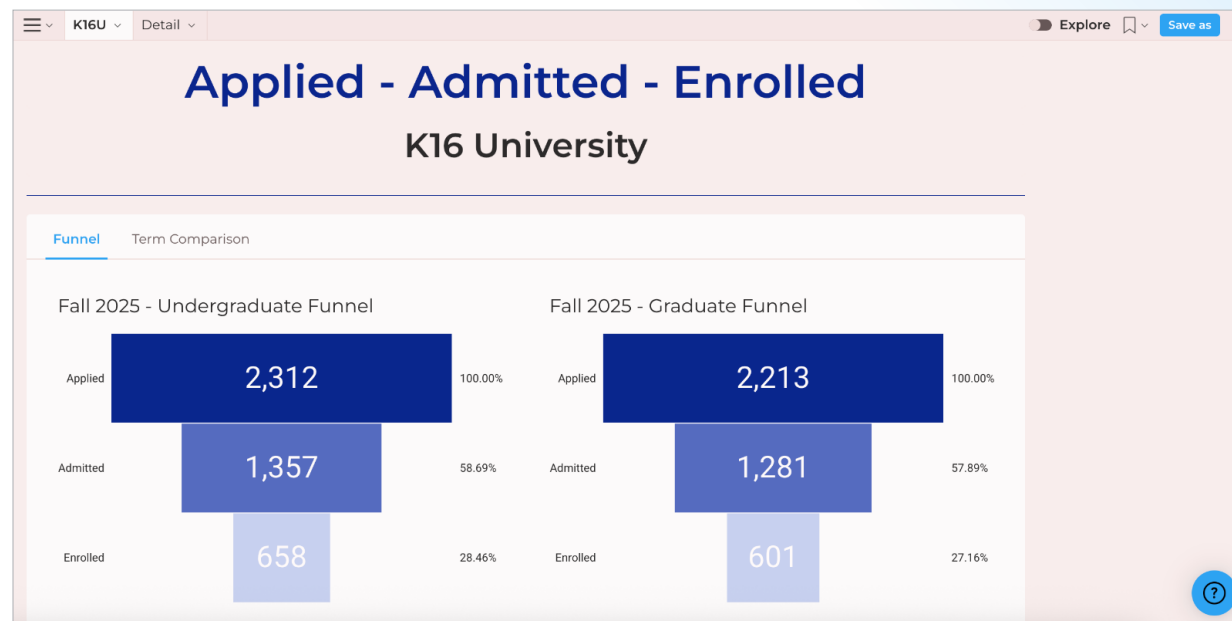

Figure 4. Scaffold DataX View -Applied, Admitted, Enrolled Funnel View

Enabling AI Success Through Data Readiness

Artificial Intelligence (AI) continues to gain traction in higher education, powering chatbots, predictive analytics, personalized learning, enrollment forecasting, and more. Yet the effectiveness of these tools hinges on a fundamental truth: AI is only as powerful as the data it receives.

Scaffold DataX plays a pivotal role in unlocking the full potential of institutional AI strategies by delivering the foundational element they need—high-quality, well-integrated, and timely data.

7.1 Fueling Smarter AI Outcomes

By centralizing data from LMS, SIS, CRM, ERP, and other systems into a clean, neutral data model, Scaffold DataX ensures that AI algorithms have access to accurate, consistent information. This reduces noise, eliminates duplication, and provides a single source of truth, allowing AI models to generate more precise insights, predictions, and recommendations.

7.2 Real-Time Data for Real-Time Decisions

Many AI tools underperform because they rely on outdated or incomplete datasets. With Scaffold DataX's automated pipeline, institutions ensure their AI platforms are always working with the most current data, supporting adaptive learning models, real-time alerts, and just-in-time interventions with confidence.

7.3 Laying the Groundwork for AI Expansion

Beyond improving today's tools, Scaffold DataX helps institutions future-proof their technology stack. Its flexible, scalable architecture supports the seamless integration of future AI applications while ensuring data governance remains intact. Whether deploying machine learning models for enrollment forecasting or natural language tools for student services, DataX ensures your institution's data is ready.
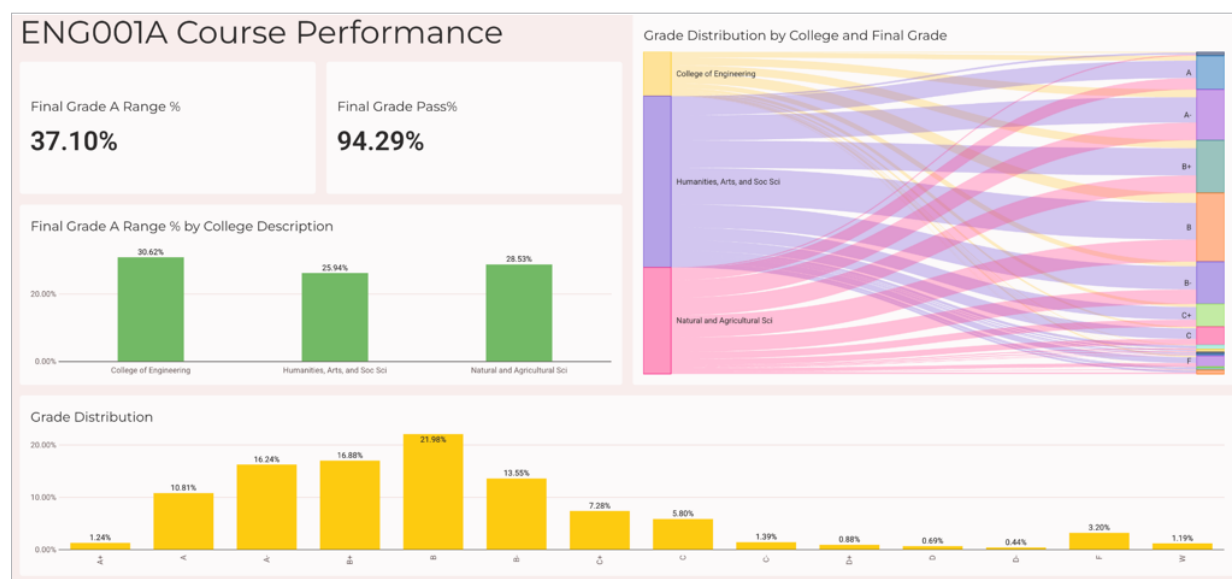

Figure 5. Scaffold DataX View - Course Performance View

Conclusion

Scaffold DataX by K16 Solutions is revolutionizing data governance and management in educational institutions. By automating data warehouses, Scaffold DataX provides high-quality, reliable data that supports informed decision-making and strategic planning while streamlining budget planning cycles and reducing overall costs. Its scalability, flexibility, and comprehensive feature set make it an invaluable tool for institutions aiming to enhance their data management efforts.

With Scaffold DataX, educational institutions can overcome the complexities of data management, reduce operational costs, and focus on leveraging data insights to drive success. As K16 Solutions continues to innovate and expand Scaffold DataX's capabilities, the future of data governance and management in education looks promising.

To learn more about Scaffold DataX, visit **https://www.k16solutions.com/product/scaffold-datax/**.