University of St Andrews

Using Insight on Data to Deliver a World-Class Education

Founded in 1413, the University of St Andrews in Scotland is the oldest of the four ancient universities of Scotland and the third-oldest university in the English-speaking world. The student body is notably diverse. With over 10,000 students and 45% of its intake from countries outside the UK - over 145 nationalities are represented - managing their academic progress and wellbeing is a challenge.

St Andrews has twice been named "University of the Year" by The Times and Sunday Times' Good University Guide, most recently in 2022, and is one of only two UK universities to achieve this.

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The Problem

The student administrators rely on a data warehouse and reporting system to gain insight into the students – how they perform academically, funding, attendance rates, and pastoral details such as accommodation and wellbeing. With a large percentage of students coming from abroad, providing this support is critical since there is cultural, language and academic background diversity and many are young people living far from home.

In addition, they use the insight for facilities planning; during the COVID pandemic a larger-than-usual number of students joined the university but studied remotely. Data analysis is helping the university plan as an increased number of students are now expecting to attend in person and they need facilities and accommodation.

The data warehouse was part of a wider data transformation programme to meet new demands from business users to become more data driven in decision-making. A review was performed to understand if it was fit for purpose.

The review highlighted several issues: complexity of making change; the ability to onboard new people to the development team; the ease and reliability of promoting changes to test and production; the lack of lineage making hard to do impact analysis; the granularity of the security model; duplication of reporting data making it more prone to inconstancy; the lack of agreed definitions and documentation.

The Solution

St Andrews decided to review several design methodologies and tools to help resolve these issues and asked Rittman Mead to support the selection process. Rittman Mead recommended three additional tools and two design techniques to be included in the review process.

To help the university make an objective decision about the best tool to adopt, Rittman Mead's team worked with the university to create a capability matrix. This matrix rated key selection criteria, such as the ability of the tool to implement change, the availability and cost of developers in the market, the release management capability, and the tool's ability to implement the selected modelling methodology.

The university assigned weights to each attribute, and Rittman Mead's team of experts evaluated and scored each of the candidate tools based on these criteria. After the assessment, Rittman Mead proposed a new hybrid architecture and approach based on a custom version of DataVault combined with Kimball star schemas. Oracle Data Integrator (ODI) would be used to automate the loading of the data warehouse, which would run in an Oracle Database. Reporting and dashboards would continue to be produced in QlikView.

Benefits for the University of St Andrews

- The innovative combination of data engineering, new architecture and implementation will enable St Andrews to be much more agile in on-going development of the data warehouse – fixing issues, adding new data, adding new reporting or analysis.
- Rittman Mead were able to recommend a development and delivery framework and provide accelerators to the university which speeded up the creation of the new data architecture and reduced the risk of the data transformation project. The Rittman Mead Development Framework and the accelerator is tried and tested on multiple projects internationally.
- Student administrators will have much better insight into the students. For the first time they will be able to track each student's complete journey as they study at the university. For example, they can assess the impact on resources when students change from one course to another.

"When we were introduced to Rittman Mead, we realized that they understood where we were starting from and the journey we wanted to go on. So instead of proposing an off-the-shelf solution, they gave us the pragmatic steps we needed to take to get there.

Rittman Mead helped us realise we could use the tools we already had, but make improvements in areas like data quality, data lineage and dev-ops. We now have a good architecture. Our data modelling is now much improved. We are working together as a team with much greater agility, getting the guidance, advice, and support at the point when we need it." - ***Mark Hood, Head of Business Architecture and Analysis***