



THE COMPUTERWORLD HONORS PROGRAM

CASE STUDY

LOCATION:
*Tallahassee, Florida,
United States*

YEAR:
2006

STATUS:
Laureate

CATEGORY:
Education and Academia

NOMINATING COMPANY:
Business Objects

ORGANIZATION:

Florida State University

PROJECT NAME:

Student Information Management System

Summary

To make the enrollment management effort more strategic, Florida State University created a “student information management” team that deployed a Business Objects business intelligence solution that enabled the university to leverage data from disparate data silos through all stages of the admissions, enrollment and retention processes. The resulting efficiency, accuracy and effectiveness have benefited students and the University.

FSU has used Business Objects to: 1) determine which students have the greatest probability of succeeding at the University, 2) identify sub-populations that need specific correspondence, 3) analyze course availability and demand, and 4) provide workflow documents that direct back-office processes including data integrity audits and lists of students that are ready for the next stage in the workflow.

Introductory Overview

Over the last several years, Florida State University (FSU) has implemented a strategic enrollment management model, which brings together admissions, registration, retention, financial aid, housing, orientation, advising, cashiering and visitor services functions to develop strategies for recruiting highly selective groups of students who had the greatest probability of success at FSU.

This integrated approach, however, depends on access to student information that must be integrated from multiple operational areas, and FSU, like most universities, did not have the information systems in place to enable a seamless integration. Instead, data stored in IBM DB2, Oracle and other databases were siloed by department and application.

The specific need was to be able to look a various applicant groups, whether by academic profile, financial resources, geography, or race and ethnicity, and see how many were applying, when they were applying, and their likelihood for acceptance and enrollment. Unfortunately, even requests for far simpler reports would go to the IT department, which would require an iterative process to clarify the exact report requirements. The request would then be scheduled, and by the time it was produced, the opportunity to act on the information it contained may well have



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passed.

To make timely reporting on integrated data a reality, FSU deployed business intelligence and reporting solutions from Business Objects. With Business Objects, FSU created a data warehouse that integrates data from the various data silos. The data warehouse now includes information from the time a student inquires about admission to FSU, through the application, acceptance, orientation, and initial enrollment; as well as housing, financial aid, course enrollment, retention and graduation. Business Objects made it easier and faster to create and uniquely format both production and ad hoc reports without the need for programmers or advanced technical training. As a result, reports are no longer limited to static paper documents that are destined for large binders or the shredder. Instead, the data are in an electronic format that can be saved, then modified or refreshed by the most basic user, or these reports can be dropped into Excel or a .pdf file for broader distribution.

In order to take advantage of this technical solution, the Office of Admissions and Records created the Student Information Management Team comprised of key functional users/researchers that helped the database administrators organize the data in the data warehouse. This team also became a resource for the enrollment management team entire campus with regards to creating new reports and training staff on the use of Business Objects with student data.

Benefits

Today, Business Objects facilitates interdepartmental communication throughout all aspects of the admissions process, from funding decisions to recruiting strategies. The system provides an integrated student information management solution that provides administrators and faculty with easy access to comprehensive information on recruitment and retention data, student demographics, and enrollment records. With this information, administrators can determine optimal recruitment strategies for each sub-population, create targeted marketing programs, make informed decisions about admissions criteria, develop successful retention strategies and manage workflows to ensure accuracy, and efficiency in back-office processing.

The user-friendly interface of the system has demystified the process of mining data, allowing a broader audience the opportunity to access the shared data pool. More participation, more effective enrollment tracking, and more strategic marketing decisions are all helping the university achieve its overall business and educational goals.

By providing administrators with self-service access to information, Business Objects has eliminated the dependence on the IT department to create and maintain reports. Users now have immediate access to a library of approximately 1,000 standard reports, such as who hasn't paid an application fee and who hasn't responded to an offer for a summer program. Users can also easily create new reports and share them with their colleagues.

Administrators have also created a decision matrix that simultaneously utilizes many factors and considers data from several databases to determine which prospective students have the best probability of success at FSU. With Business Objects, FSU administrators can now make more informed admissions decisions in order to attract a diverse student population with a balance of in- and out-of-state students, while maintaining its high academic standards. Reports are also created that help in budget strategy, strategic marketing, and reporting to the State of Florida.

In addition to the improved efficiency and accuracy afforded to the University, the use of Busi-



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Business Objects helps create student success. Not only is Business Objects used to recruit students with the highest probability of earning a degree from Florida State, it is also used throughout their enrollment to ensure the greatest chance for them to succeed. Reports that assess the demand on each course offered allow administrators to provide additional sections of courses that are of highest need for students to progress. Student performance is measured each semester so that interventions can be made with students who are struggling in the classroom. High achieving students and students who have improved academically are sent e-mails congratulating them on their success. Students receive reminders of key events and new policies that may affect their academic progress at Florida State. For example, FSU will remind them that they need to pay an application fee, have a pre-registration window opening, appear to be a Florida resident but have not completed the residency form, or that they need to get a graduation check. Targeted communications are sent to students depending on countless variables to make sure they remain on track at Florida State.

The Importance of Technology

With the amount of data FSU collects and the number of disparate data systems, FSU could not have cost-effectively accomplished its goals without the comprehensive Business Objects platform for data integration, query and analysis, reporting, and web access to the reports. These capabilities were critical to the success of this project. In addition to providing the tools the FSU needed to create a shared pool of data from across the university, the development environment enabled IT to create and deploy the system quickly, and the simple interface provided by the web portal meant that the solution could be used by a greater number of less technical users with minimal training.

The other key to the technology is the flexibility of data that are extracted from the reports. Because FSU has some highly code-based legacy databases, the individual fields contain many one, two and three digit codes that are not known to all users across the FSU campus. Data values can be recoded into descriptive terms that can be used in reports. Thus an "F" code means Florida Resident/US Citizen and an "R" code means Florida Resident/Resident Alien. Not only can they be represented based on the descriptions just listed, but they can also be recoded and collapsed into Residency = "Florida" or "Out-of-State." Both of these recodes are simple point and click operations that can be done by novice users with a single two-hour training session. A more intermediate function is to compute new variables using "if/then" logic. Again, these are point and click operations that do not require knowledge of SQL (although a programmer could write directly to the SQL if they had that preference).

Most reporting relies on the underlying assumptions that are coded into the way data are joined by the database administrators. Functional users worked with the database administrators to confirm whether tables should be joined with outer or inner joins (when pulled from different data silos). Very few users are even aware that these assumptions had to be made and tested by the data custodians, they simply point and click.

Not all relevant data resides in formal University databases. Business Objects allows more advanced users to join corporate data with external lists that are available in Excel or formatted text. This technological feature allows FSU to take a list of State scholarship winners and compare them to current applicants or enrollees for example by simply joining the exterior data to data in the Business Objects Universe for FSU.



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Finally, Business Objects allows for the output to be in the form of a list of names (much like a standard Excel spreadsheet) or it can be formatted to replicate an existing form. The latter was used to create Graduate Action Forms that provided the necessary demographic and academic information for each student on a single sheet on which the graduate departments indicate their formal admission decision (and with appropriate signatures). The form is returned to the Admissions Office so the student can be notified of the decision. Output can also be exported to html, text, and Excel (to name a few). The Office of Institutional Reporting generates most of the data on their website by simply exporting a Business Objects report to html and publishing it to the web at <<http://www.ir.fsu.edu>>.

Originality

The two greatest innovations of the Student Information Management Team are the workflow management reports and the Admissions Decision Matrix. Current workflow reports do all of the following and much more: 1) identify students from Florida who are coded as non-Florida residents for tuition purposes so they can receive a letter and a residency form, 2) identify all students who applied online last night so their records can be pulled and audited, 3) identify students that are potentially eligible for the University Honors Program based on their coursework, grades and test scores so they can be reviewed by the honors program to determine eligibility, 4) identify potential data mismatches so they can be corrected or so that the student can be contacted to provide clarification, and 5) identify all students who have submitted sufficient documentation for their applications but have yet to be evaluated so their applications can be reviewed by an admissions officer. There are ten to 15 workflow reports that are used on a daily basis by the Office of Admissions alone. These reports ensure efficiency of effort, correctness of data and timeliness of communications with students. As such they are invaluable.

This past year, the Admissions Decision Process was completely revamped to leverage the power and flexibility of Business Objects. Each year, FSU received upwards of 40,000 freshman admissions applications that are reviewed, evaluated and summarized by professional staff. The information is entered into the admissions database. Because FSU uses a multi-factor, multi-scale, matrix model for assigning admissions decisions, there are many algorithms and “if/then” scenarios that must be considered. Needless to say, there were many opportunities for human error when the decisions and letter assignments were done manually. For each of the four decision dates, a cohort value was added for each applicant who was ready for a decision. Decision variables include: weighted high school GPA; academic units completed by subject area; ACT and/or SAT scores; indicators for Calculus, advanced foreign language, rank in class, strength of senior schedule, presence of D or F grades, participation in special programs, socio-economic status, residency, and grade trends to name a few. Additionally, files could not be reviewed if certain “stops” were indicated or the application fee had not been paid.

All data for a given cohort were loaded into the Business Objects report that compared all the data collectively to certain cells within the decision matrix to determine whether the student was to be accepted, denied, held for additional grades or test scores, offered summer or wait-listed. These decisions were coded into the report via complex recoding and each applicant was given a cell marker that defined which cell they fell into and their placement in that cell relative to other applicants. Minimum thresholds were established for each cell to determine the cut lines for acceptance, summer offer or waitlist. However, in order to determine the cell, the ACT and SAT scores had to be compared via concordance table to determine which was higher.



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Once the decision was determined, each student was assigned a letter number via an algorithm that took into account whether they had dual enrollment credit or had been previously held or denied. The letter numbers were eventually loaded into the Admissions database so that the letters could be generated.

The innovation of this process is that it involved countless recordings and algorithms that compared each student's application to a matrix as opposed to a single scale. This allowed the Office of Admissions to adjust the cut lines based upon other Business Objects reports that were used to predict how many of the students would actually enroll. The entire process allowed us to review all newly completed applications and revisit all prior decisions in a single report that analyzed almost 40,000 records and made decisions and determined appropriate letter numbers in less than an hour. The process also included about 20 different audits to ensure that the appropriate decisions were made. Unlike a hard-coded program, this Business Objects solution allowed the Office of Admissions to change the letter numbers, cut lines and algorithms on the fly.

When FSU began its Enrollment Management Committees (Undergraduate and Graduate), many decisions were based on simplistic data analyses and anecdotal observations. With the advent of the Student Information Management Team and the deploying of Business Objects, FSU and its various constituent groups have been able to create truly next-generation enrollment management systems by creating the infrastructure for data-inspired decision-making in virtually all areas that affect students.

The originality of this project has been in the pervasiveness and creativity of the deployment. Rather than use Business Objects simply to replace existing production system reports, FSU has used the flexibility of the software to customize those reports for each constituent group. An admission funnel that describes numbers of students who have applied, been accepted and enrolled for one academic department has a separate tab with the names and key information about the accepted student and another like tab for enrolled students. A similar report compares those numbers to show trends across three consecutive years. By domaining the security behind the reports, the report only shows College of Business data when executed by an authorized user in that college, whereas the engineering college only sees engineering student data.

Graduate student enrollment data is analyzed during fall term registration to project revenue generated by each college and department on campus for the remainder of the academic year. This gives a proactive benchmark for the departments to use when considering how many students they need to recruit for the spring term. An additional report on course demand allow them to know what courses are filling up quickly so they can shuffle resources to offer additional sections.

The Student Information Management Team assists all administrative and academic departments on campus as well as external entities to gain appropriate information about students and student enrollment at FSU. Through their website, <<http://esinfo.fsu.edu>>, they not only provide information on what data are available, but they also provide an online request form for generating new base reports for the broader community. To date, this small group has generated thousands of reports. Many of the reports are ad hoc responses to specific questions, but others are used to extract survey data for accreditation or third-party publications. Once saved, these reports can be used for the survey in subsequent years. If some of the survey questions change from year to year, changes are usually made in minutes.



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Each Business Objects report is portable and can be saved with a very descriptive name that uses the jargon that is familiar to the end-user. The end-user can save the report to their desktop and refresh it daily, weekly or annually with a single click. Other reports are “published” to “corporate documents” on the web that can be accessed and run by authorized users from any location assuming they have a secure connection to the University and a web browser. The corporate documents are clustered according to user group so there are report folders for Undergraduate Admissions, Graduate Admissions, Graduate Enrollment Management, and Registration to name a few. Each of these reports has domain-based security so users only get data that are relevant to their operations. Most reports also have user prompts that allow users to change values in the query each time they refresh it. For example, if someone wants to refresh the aforementioned funnel report, they get a prompt that says <enter the desired matriculation year (e.g., 2006)>. They can enter 2005 if they wish and then click <run>. With appropriate security authorization, any user could refresh that report without any unique training.

Success

The FSU business intelligence implementation has exceeded its initial goals and is now used throughout the university to satisfy a variety of information needs beyond its original purpose, including in human resources and operations. Users appreciate the easy access to the information they need, and learn to use the system with a minimum of training.

Although the focus of this case study has been the student systems and the Student Information Management Team, Business Objects is currently being used to report on human resource and financial data retained in Oracle/PeopleSoft. The software allows users to operate at varying levels of competency. Most users have a few reports that they use frequently which are stored in a folder on their desktop or through corporate documents on the web-version. However, Business Objects is also used quite extensively by programmers and researchers who are comfortable with less user-friendly interfaces. It is not unusual for members of the Student Information Management Team to switch between Business Objects and more statistical packages like SPSS and SAS. There is very little other than heavy statistics that Business Objects cannot manage in a much simpler fashion than the alternative.

As with any technological implementation, diffusion of innovation is a key to the adoption and ultimate success. Because most users access reports via their web browser, the process is demystified. The addition of the query value prompts makes it all the more friendly. One of the earliest non-technical users, who is better described as techno-phobic, works at a branch campus and her Dean wanted admissions status reports every Monday. She described the reports to the Student Information Management Team and they created five base reports for her. The reports were e-mailed to her campus and with the help of a local technology support person the reports were added to a folder on her desktop. She was asked to open each report and make a name that described it. The technician renamed all of the reports to meet her expectations and she has continued to use the reports unaltered for the past five years – double-click, enter your password, click on the blue and yellow symbol, then print. She once remarked about the reaction from her Dean and she indicated that he couldn't do his job without those reports. She is a true believer. What is more remarkable is that it took no more than 20 minutes for each report to be made.

The Student Information Management Team gets up to a dozen new requests every day for re-



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ports. In most cases, the designated team member looks to see if a similar report is in the report library that they can modify or refresh to complete the request. A simple modification can be done in a couple of minutes. Most simple descriptive reports can be done from scratch in ten minutes.

A remarkable testimony to the Business Objects implementation at FSU is that when the human resources and financial systems moved to PeopleSoft, the immediate tack to get around the reporting shortcomings was to extend the existing Business Objects deployment to be able to read data from PeopleSoft. Another testimonial of sorts is that FSU, which has taken pride in developing most solutions in house, is looking to upgrade to Business Objects XI in order to gain additional flexibility and features not previously offered.

The management of student information within Business Objects continues to expand at FSU. Key enrollment strategists in every college and school will be offered training and access to strategic enrollment reports so they can better predict and manage their enrollments. The Student Information Management Team continues to play a big role in that effort as well as working with the database administrators to join additional data stores within the Business Objects Student Universes. The team will also be leading a newly reformulated Business Objects Users Group as a way to assist other members of the campus in unleashing the power of data.

As for more measurable successes, FSU looks to enroll its most academically-gifted freshman class this Fall Term – a group that has an average academic GPA of 3.8 and an average SAT score projected to exceed 1200. All told, FSU will enroll 6200 new freshmen this year. Graduate Enrollment for 2005-2006 as measured by student credit hours very closely met the targets set by the State and the FSU administration. Course availability issues have not been a problem since demand tracking via Business Objects was implemented.

In short, FSU's use of Business Objects has put the "strategic" into their strategic enrollment management effort.

Difficulty

With any technological solution, there are issues. After securing the funds necessary to purchase an enterprise license, the biggest obstacle for FSU was to join Business Objects to a local roles matrix for security and authorization schemes. After that was accomplished, the next goal was to determine how it could best be used. The reality at FSU is that there need to be two layers of support for any business intelligence solution. One is technical, and the other relies on the data custodians from the functional side of the house. Just as Business Objects was used to empower the layperson to generate reports without the assistance of programmers, that access needs to be guided and monitored by the data custodians who should fear that information can be misreported or misconstrued. Thus, it is important that FSU's implementation was a collaborative effort between technical and functional staff and that the lines of communication remained open throughout.

The life cycle of the product is also an evolutionary path. There are still frequent interactions between the functional leads and the technical support. Different versions of the software have been more or less stable at different times over the past several years. But the overall satisfaction with the product and the Student Information Management Team has been very good.