



The Computerworld Honors Program

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Final Copy of Case Study

Status:

Laureate

Year:

2013

Organization Name:

University of Kentucky

Organization URL:

www.uky.edu

Project Name:

Big Data Analytics to Increase Student Graduation Rates

Please select the category in which you are submitting your entry.

Emerging Technology

Please provide an overview of the nominated project. Describe the problem it was intended to solve, the technology or approach used, how it was innovative and any technical or other challenges that had to be overcome for successful implementation and adoption. (In 300 words or less)

The University of Kentucky launched a program to improve student retention and satisfaction to ultimately increase graduation rates. As part of this mission, the University developed technology to address challenges associated with monitoring each of these areas. Technical challenges included creating rapid data access to systems storing student interaction information, developing greater analysis capabilities, and managing large volumes of data efficiently. To develop and deploy a solution that addressed these challenges, the University partnered with SAP as its software and services partner and Dell as the hardware partner. SAP worked closely with the University in scoping and implementing the solution while Dell provided a managed installation. Through the collaborative efforts of SAP and Dell, the University installed a big data analytic tool in less than three days. Powered by an SAP HANA database, the system replicates data in real time from the University's SAP enterprise system into SAP HANA so student performance and interaction data feedback can be viewed in real time. In addition to providing database capabilities with direct access from different end-user tools, HANA

features report-generation speed with parallel computing and an in-memory approach to high-speed analytics. The platform lets users quickly create queries that are executed, on average, 420 times faster than the previous system. Queries that took 15-20 minutes in the past now take between two and three seconds. By introducing SAP HANA into the system landscape, the University expects to improve student graduation rates as well as retire legacy systems. This will reduce IT infrastructure costs and increase IT productivity. By managing data in a single environment with rapid report generation and decision-support capabilities, the University also expects to recognize \$1.1 million in additional revenue for each one percent increase in student retention.

When was this project implemented or last updated? (Please specify month and year.) Has it incorporated new technologies and/or other innovations since its initial deployment? (In 300 words or less.)

April 2012.

If this is a previously submitted project that has been significantly updated and/or expanded, please describe the nature of the update here. (In 300 words or less.)

Not previously submitted for the award to our knowledge.

Is implementation of the project complete? If no, please describe the project's phases and which phase the project is now in. (In 300 words or less.)

Yes, complete.

Please provide at least one example of how the technology project has benefited a specific individual or organization. Feel free to include personal quotes from individuals who have directly benefited from the work. (In 300 words or less)

"We now have an effective real-time data-driven system that is essential to giving immediate performance feedback so we can increase the retention rate of students. This capability provides millions in increased revenue for the University every year." Vince Kellen, CIO, University of Kentucky. Student Benefits: Provides students with tailored advice based on demographic data, academic background, and performance through individual academic health record reports sent to mobile devices. Students receive actionable indicators with digital access to services, personalized information and peers. Notifies staff advisers when individual students need help through automated alert system based on analytical models. Pinpoints exactly when students need intervention, sends alerts to specific faculty and advisers, and streamlines escalation/follow-up. Over the long-term, the system will power automated and personalized learning objects that complement face-to-face instruction. Rather than "flip" a classroom by requiring students to consume lectures and static materials outside of class, the University plans to "flip" the classroom by pointing students at intelligent learning objects that can adjust to individual learner attributes. These attributes will be a combination of what the University already knows about individual students (based on high school, prior college coursework and test scores) and what the University can learn about students while they interact with the learning object. "Imagine a learning matrix for algebra from a smart learning object over the Web that adjusts the display and method of interaction in real time as it



learns how a student learns best how to use data owned and protected by the institution. This is an example of the new capabilities we expect the system to provide." Vince Kellen, CIO, University of Kentucky.

Would this project be considered an innovation, a best practice or other notable advancement that could be adopted by or tailored for other organizations and uses? If yes, please describe that here. (In 300 words or less)

The solution deployed by the University of Kentucky to help improve student retention and satisfaction in order to increase the graduation rate could easily be adopted by other higher education organizations. Every institution has a significant amount of big data to work with. The key is to harness the data and use it effectively to improve student satisfaction and the likelihood students will graduate. The ability to process large amounts of data at superfast speed opens the door to automated, mobile, and deeply personalized education. With this capability, colleges and universities can accurately and quickly evaluate the satisfaction that students experience. By quickly pinpointing the causes of dissatisfaction and areas in which students are struggling, professors and advisors can then interact immediately. The University can also proactively consider whether certain programs need to change and whether communications must improve so students become more aware of resources that can enhance their education experience. Taking this initiative will lead to an increase in student performance, which in turn will help colleges and universities retain more students until they earn their degrees. This not only creates tremendous value for the institutions, but also creates great value for students. They are more likely to settle in at the first college or university of their choice and experience the full benefits that institution offers. In addition to earning degrees within a shorter time frame and becoming ready to join the general workforce, students that stay at one institution avoid the hassle of having to transfer to another institution or joining the general workforce before they are fully prepared. They also benefit from the social aspect of developing longer-lasting, deeper relationships with their fellow students and the faculty. Such relationships often have a profound impact on their future careers.

If there are any other details that the judges should know about this project, please note them here. (In 300 words or less.)

The new real-time data access, analysis and reporting solution that the University of Kentucky now has allows faculty and advisors to act upon a deeper understanding of specific success factors that can help make a University degree a reality for more students. For example, the University now uses its analytic capabilities to quickly identify students who need additional support in their critical first weeks on campus. With this ability, the University expects the technology will contribute towards its goal improving student retention rates by 10 percent. The benefits are far reaching. Better retention rates mean that thousands of additional students will have the opportunity to pursue their career dreams after graduating from the University of Kentucky.