

CASE STUDY \ \ PREDICTIVE ANALYTICS AND DATA MIGRATION

Wichita State University - Predictive Modelling for Student Retention



BACKGROUND

Wichita State University (WSU), a public university, is the only metropolitan university in the Kansas Board of Regents' system.

The University's 14,000 students study business, education, engineering, fine arts, health professions, and liberal arts and sciences at the undergraduate and graduate levels. WSU's vision statement includes being known for providing impactful student experiences and driving prosperity for the people and communities the schools serves.

ENSURING STUDENT SUCCESS

Challenge

WSU (and the educational system in general) has recently been wrestling with the continuing impacts of COVID-19. Once thought to be a relatively short-term burden to be endured until normalcy returned, the pandemic has evolved into a longer-term threat to overall student success. Time away from campus and the unfamiliarity of online classes have increased the risk of students falling behind or dropping out.

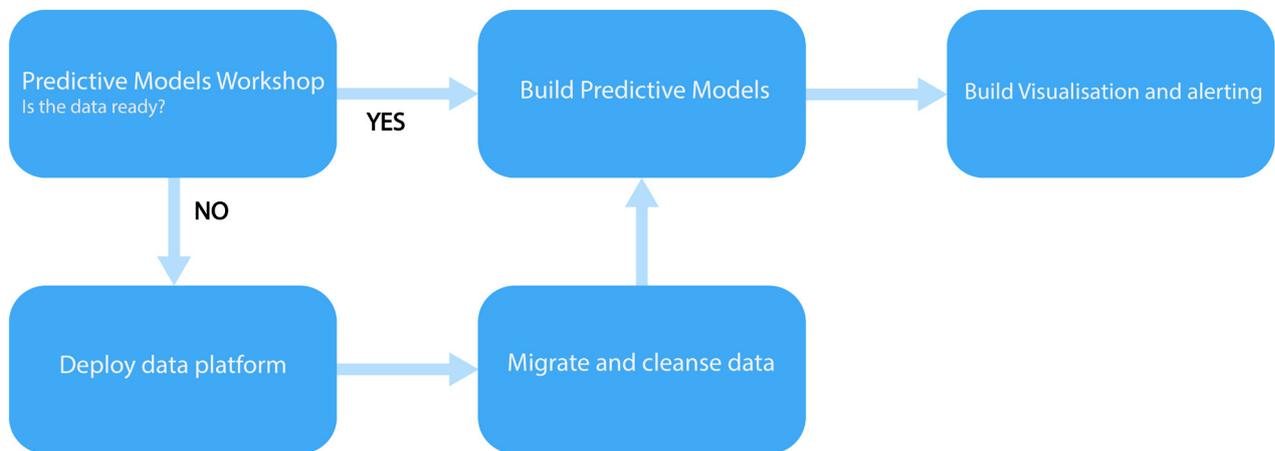
The University recognised this issue, seeking a proactive way to ensure their students succeed both at school and beyond. They wanted a way to identify 'at risk' students – those most likely to either drop out or fail to graduate on time.

However, the normal methods used to identify these students, such as exam grades and attendance, are too reactive in nature. It takes time for grades to be released onto the system, meaning that many 'at risk' students are simply not identified early enough.

WSU therefore wanted to be able to predict which students are most at risk. This would enable them to provide earlier intervention and prevent students from slipping through the cracks.

Action

The Prolifics Predictive Behaviour-Based Value Modeling solution uses artificial intelligence (AI) and sophisticated data analytics to examine behaviours, make connections between 'digital footprints', and generate actionable insights more accurately and at greater speed than a human ever could.



We applied these steps at WSU as follows:

- **Prolifics Predictive Models Workshop**

- During this workshop, we walk through specific predictive use cases to determine the scope and data readiness to achieve the desired models. There was significant work necessary to prepare the client data. The University suffered from data silos and a myriad of different running tools that hampered its ability to effectively manage its data.
- WSU also needed to include its community college network as part of this initiative. University students often take classes across this network, so access to relevant information was an important piece of the puzzle. In addition, the school wanted to incorporate student activity from the community. The University placed a heavy emphasis on community involvement as part of the overall educational experience, so they needed real-time access to data from their community partners.

- **Deploy Data Platform**

- With many of our clients, the initial hurdle is that client data is trapped in older, siloed systems. This was the case with WSU. To centralise their data access, Prolifics deploys a centralised data platform to serve as the hub for the data feeding the predictive models.

- **Migrate and Clean Data**

- To resolve the University's internal data silos into the new centralised data catalog, Prolifics migrated their current data and implemented a managed approach to the data governance, business terms, and their data glossary.

- **Build Predictive Models**
 - We then built models to help accurately predict student success and student risk. These models leveraged specific real-time indicators to determine how well students would perform, while also indicating where instructors or counsellors need to give extra attention to students.
- **Build Visualisation and Alerting**
 - We created and deployed a customised dashboard with alerting capability. This gave WSU the easy, immediate access to the information needed to make real-time decisions for interventions.

Results

The solution went live in January 2021. The University is currently using the following metrics for improving student success:

- Reduced dropout rate (how many students drop out before graduating)
 - Increased time-graduation rate (how many students graduate within 4 years)
 - Improved student satisfaction scores
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In addition to fulfilling its nurturing aims, the University's achievement of the above metrics are expected to satisfy tangible business needs. For example, WSU will be better able to market itself to new students, bringing in revenue and promoting a cycle of improvement.

Follow-on metrics include:

- Increased number of applications received for incoming students and transfer students
- Improved quality of the applicant pool (ability to attract students with higher test scores)
- Improved quality of incoming classes (better students will typically yield better student outcomes)

Technology

For WSU, we used the following technologies for data:

- **IBM Cloud Pak for Data 3.5**, running on Red Hat OpenShift 4.0, to provide the underlying data layers with cloud platform flexibility.
- **IBM Cloud Pak** for DataStage Cartridge, for ETL
- **IBM API Connect**, for data sharing as needed.
- **Prolifics Migration Factory Accelerator**, enabling us to rapidly migrate ETL jobs from competitive platforms to IBM Cloud Pak for Data. This accelerator covers the gamut, from analysing the old systems and developing the new environment, to testing, deployment and support. We provide this migration at a cost-effective rate by cleaning and organising data through our offshore component.
- **Prolifics Cloud Pak for Data OpenShift Accelerator**, speeding up the interoperability between Cloud Pak for Data and Red Hat OpenShift. In collaboration with IBM Offering Management, we created this accelerator and documented the nuances to ensure a successful implementation of Cloud Pak for Data on OpenShift.

We also used the following technologies for data:

- **IBM Watson Knowledge Catalog**, to prepare data for AI analysis.
- **Watson Assistant, Watson Discovery, and Watson Explorer**, to uncover, search and explore structured and unstructured client data across all channels.
- **Watson Studio and Watson Machine Learning**, to build and deploy automated AI workflows, and Auto AI to manage and simplify the AI lifecycle.
- **Prolifics Predictive Model Templates for Watson**, accelerating the creation of custom predictive models by using a set of standard models as a starting point. Prolifics created these standard models specifically for IBM Watson products.



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