

## **Paper 3635-2019**

### **Integration of the SAS® Platform in a Business Analytic Curriculum**

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#### **ABSTRACT**

The objective of this breakout session is to show strategies used while implementing the SAS® Platform into a Business Analytics curriculum at the University of Arkansas. The University of Arkansas Walton College of Business, located in Fayetteville, Arkansas, is accredited by the Association to Advance Collegiate Schools of Business (AACSB). The AACSB has participated in workshops with the Information Systems Department, outlining best practices for business analytics programs. SAS has been instrumental in helping to design the business analytics programs and has recognized the value of our program by presenting graduate and undergraduate students upon completion with a certificate endorsed by SAS. The initial portion of this session outlines the journey of program design and growth. The SAS solutions used in the Analytics program include SAS® Enterprise Guide®, SAS® Enterprise Miner™, SAS® Viya®, and SAS® Visual Analytics. The second part of the session provides an outline of how SAS® has been used in the core courses leading to the presentation of the SAS certificate. In addition, aspects of these applications are used in courses outside of the core courses in order to supplement the skill-set development of the students.

#### **INTRODUCTION**

The Sam M. Walton College of Business at the University of Arkansas has established itself as a leader in business analytics programs. This recognition is evidenced by its collaboration with the Association to Advance Collegiate Schools and Business (AACSB) and the ISYS Departments Enterprise Systems group that provides data and platforms to faculty and students worldwide. This paper will outline the steps that were made by the team in the Walton College to bring about their business analytics program and show how SAS has been and continues to be an integral part of the success of this program.

#### **ABOUT THE SAM M. WALTON COLLEGE OF BUSINESS**

The Sam M. Walton College of Business at the University of Arkansas was founded in 1926 and has grown not only to become the state's most prestigious business school, but also nationally competitive with respect to both research and curriculum. It's mission is to "to advance and disseminate business knowledge using a diverse, inclusive, and global perspective and to encourage innovation in our primary strategic endeavors: Retail, Data Analytics, and Entrepreneurship".<sup>1</sup> This commitment to innovation, particularly in data analytics, has provided and continues to provide the leadership support necessary to advance our analytics programs throughout the college.

The Department of Information Systems in the Walton College of Business is a leader in the teaching and research of business analytics, enterprise resource planning, enterprise systems, and most recently blockchain. Students who take information systems courses are not only exposed to the very latest computer technology and authentic business data but are also trained and equipped to solve business problems, create new business opportunities, and operate businesses more efficiently using these technologies and data.

Enterprise Systems at the Walton College is an initiative started out of the Department of Information Systems to support education and research efforts at the University of Arkansas and around the world.

Combining world-class technology, authentic data from industrial partners, and well-crafted use case tutorials, the Enterprise Systems team supports an end-to-end analytics curriculum solution for faculty and students. In addition, recent textbooks in business and accounting analytics, as well as open online courses in analytics and big data have featured the use of our systems and the data in their coursework.

## **SAS AND ANALYTICS AT WALTON: A HISTORY**

### **1998 TO 2012**

Big data, analytics, and SAS have been integral parts of the landscape at the Walton College of Business and the Department of Information Systems since the late 1990s and early 2000s. In 2002, students completing analytics courses in the Walton College using tools like SAS Enterprise Guide were given certificates of completion recognized by SAS. Up through 2010, analytics and data mining courses continued to use these tools including SAS Enterprise Miner hosted by IT Services at the University of Arkansas. While these tools were capable for use in the classroom, the platform for connecting these tools, particularly SAS Enterprise Miner, was not designed with classroom use in mind and was cumbersome with respect to data movement between SAS Enterprise Guide and SAS Enterprise Miner. SAS provided a “SAS Day” workshop in November of 2010 (hosted by the Department of Information Systems and IT Services at the University of Arkansas) which included a keynote by Dr. Jim Goodnight, CEO of SAS. Subsequent discussions and planning were initiated to better deliver an end-to-end classroom solution for analytics. In April 2012, the Walton College and SAS deployed its first SAS Academic Platform (9.3) which included SAS Enterprise Guide, SAS Enterprise Miner and SAS Forecast Server. These software tools, hosted on Walton College servers, provided a solid foundation and served as a catalyst for growing its analytics course and programs in the years to come.

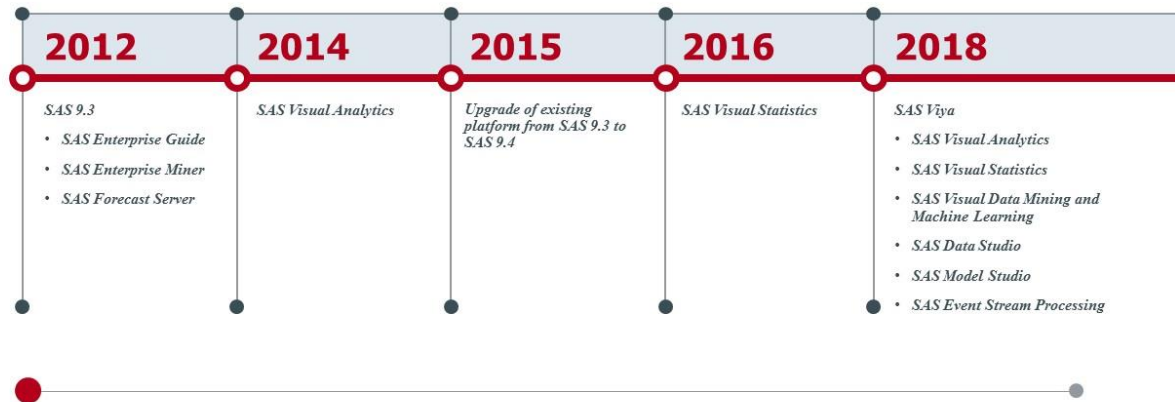
### **2012 TO 2018**

From 2012 through 2018, the Department of Information Systems experienced rapid growth by introducing new programs both at the graduate and undergraduate level. These programs were started as a response to the increased need for graduates with a background in business analytics, predictive analytics, and data management as well as a response to the mission of the Walton College. In 2012, the Department of Information Systems introduced the graduate Business Analytics Certificate program, focusing on providing students with a foundation in managing and using data, the application of decision-making with respect to data, and the exploration of data using various data mining techniques. Courses which were part of the Business Analytics Certificate program also played an important role in both the Masters of Information Systems and Professional Masters of Information Systems program. Consequently, our SAS platform grew to meet the needs of our students (Figure 1). As the graduate certificate program became more popular through 2013 and into 2014, the need to deliver and enhance an already solid technology foundation became more important. Not only was there a need to teach data management, statistical analysis, data mining techniques and predictive analytics, but an increased need to incorporate data visualization techniques into the coursework. To remedy this need, the Walton College and SAS deployed SAS Visual Analytics in 2014 for use in courses throughout the College. SAS Visual Analytics, and SAS Visual Statistics, deployed in 2016, gave students access to the very latest in visualization tools, in-memory data management, and report delivery to mobile devices. An additional benefit was providing them a user-friendly interface and positive user experience.



## SAS at the Walton College of Business

Deployment of SAS platforms in the Walton College 2012 – 2018



**Figure 1. Deployment of SAS platforms in the Walton College 2012 – 2018**

In 2015, a new undergraduate program in analytics was introduced. The information systems department supported this interdisciplinary BA minor as a way for undergraduate students to study business analytics while also focusing on other aspects of business like information systems, supply chain, marketing, accounting, or finance. Completion of this program also resulted in a certificate endorsed by SAS. The undergraduate minor is comprised of three courses:

- Business Analytics and Visualization
- Business Intelligence
- Seminar in Applied Business Analytics

In the first course, Business Analytics and Visualization, students are introduced to methods to provide “analytics-based information” from data, and how to organize this information for business decision-making purposes. Business Intelligence, the second course, builds upon the lessons learned in the first course and introduces data mining and machine learning techniques for prediction and prescriptive analyses. The third course, Seminar in Applied Business Analytics, gives students the opportunity to use what they’ve learned throughout their coursework to solve actual business problems using real data from industry. Although students have the option of using various tools for their analytics coursework, SAS is the primary platform that is common across all three courses and include: SAS Enterprise Guide, SAS Enterprise Miner, and SAS Visual Analytics. From inception, the graduate programs and the undergraduate programs saw consistent growth in the College. To support that growth, and further enhance our technology, SAS provided SAS Viya and assisted the deployment at the Walton College in 2018. This deployment, which included SAS Visual Analytics, SAS Visual Statistics, SAS Data Mining and Machine Learning, SAS Data Studio, SAS Model Studio, SAS Studio, and SAS Event Stream Processing, allows students today and future students to experience the very latest in technology from SAS,

integrating not only a world-class set of applications, but in-memory data management, and integration with open source data tools like R and Python.

## **CONCLUSION: MOVING FORWARD WITH SAS AT THE WALTON COLLEGE**

For over 20 years, SAS has been instrumental in bringing analytics into the classrooms in the Walton College, and this past year has been no exception. The deployment of SAS Viya in the Walton College has positioned the Department of Information Systems well in providing the very best tools and technology to its students. The need for a solid technology platform like SAS Viya is only going to increase in its importance as new degree programs are started in the future. Future programs in the approval stage, a Masters Degree In Applied Business Analytics and an undergraduate degree in Data Science, will benefit from the support provided by SAS and the platforms that have been built to increase the needed supply of business analysts. The future of analytics and data science at the University of Arkansas is bright.

## **ACKNOWLEDGMENTS**

## **CONTACT INFORMATION**

Your comments and questions are valued and encouraged. Contact the authors at:

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<sup>1</sup> *Mission, Vision and History*. (2019, March). Retrieved from Walton College:  
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