Chapter 13
Scalable Data Warehouse Architecture:
A Higher Education Case Study

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ABSTRACT

This chapter looks at the feasibility of creating a scalable data warehouse architecture in a higher education institution. The authors lay out the background of the historical data environment of the institution and look at ways in which the application of new technologies could better meet and exceed the needs of the institution moving forward. The chapter also covers the increased role security plays in the management and governance of data and the ways in which developing more secure aware employees through the use of People Centric Security (PCS) can reduce risk and drive positive change. The authors then look at the ten steps to create a better data framework which will allow for enhanced analytics and a greater return on investment.

INTRODUCTION

[Dr. William Edwards Deming] illustrated the difference between efficiency and effectiveness with a story about the Empire buggy-whip manufacturing company, which at the turn of the century was the best buggy-whip manufacturer of all time. Every buggy-whip they made was engineered to specification; they rarely broke, and all grievances were promptly resolved to the customer's satisfaction. In terms of efficiency, they were among the best. The problem, he said, was that they did not have a view of the future. They were in the transportation business and did not see the coming of the horseless carriage.

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In ten years they were out of business because they did not know the difference between effectiveness, or doing the right things, and efficiency— doing the right things right. (Voehl, 1995)

Today's technology enriched academic environment elicits high demands for technology provisioning and support. Weldon (2015a) states college Information Technology (IT) departments are not built for future needs. In addition, the technology demands in higher education are increasing faster than IT departments can keep up. The process of building for current demands is no longer sufficient. Even agile approaches that do not address and provision for future demands incur increasing technology support, operational and redesign costs. These "solutions" may satisfy current expectations at the expense of future costs and resource demands. Weldon (2015a) also cites a report from Babson College stating the only way to increase user satisfaction while keeping the lights on and costs down is through innovation.

Weldon (2015a) further cites Michael Kubit's examples of changes that IT campus departments need to embrace:

One of the many dangers of autonomous functional silos is that employees' success becomes tied to what they are currently doing not what they could be doing. Adaptation becomes essential rather than innovation and change.

How do we define success? Is it employee satisfaction? Student satisfaction? Improving student graduation rates? Increasing donor contributions? Increased graduate job placement? Knowing we will not be blamed for a mistake? Keeping our job?

Perhaps it is all of the above or a significant portion thereof. Can we envision a future where we can be more successful with less? Where we can do more with less rather than doing less until we have more? Where we can improve our capacity by increasing our value to work ratio? Where we are free to build tomorrow while surpassing the demands of today? A future when our best defines expectation rather than meets it? What if we were to exchange our turf for collaboration? Or exchange our comfortable autonomous castles of responsibility for growth opportunities? What if we were to base our future on what we can become rather than what we have already achieved? Why do these things matter when considering a 2-year work plan for a data roadmap? It is the authors' intention to provide a compelling case for envisioning practical, sustainable, value added data asset management.

Table 1. Current and future states

Current	Future
Knowledge hoarding	Knowledge sharing
Ad hoc training	Continuous training
Many management levels	Few management levels
Inflated titles	Few titles
Uneven responsibilities	Shared responsibility
Culture of blame	Culture of accountability
Functional silos	Cross-functional teams
Risk averse	Entrepreneurial
Information on an as-needed basis	Shared information
Climate of cynicism	Climate of celebration

(Derived from the material provided by Weldon (Weldon, 2015a))