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No Do Overs: Tips for a Smooth EBI Implementation

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ABSTRACT

Like many technology-based projects, you get only one chance at implementing the SAS Enterprise BI Server at your organization. Coupled with a lack of knowledge about business intelligence, having to get it right the first time can make implementation a daunting task. In August 2010, the Office of Institutional Research at Western Kentucky University unveiled our portal using SAS Enterprise BI Server. While we had almost 50 years of combined SAS programming experience, understanding how to make SAS Enterprise BI Server work at our institution was somewhat overwhelming. Now that we are on the other side of a successful implementation, it is easy to see the steps we took that made the project successful and the missteps we would correct if we could do it over again. For those considering or implementing SAS® 9.2 Enterprise BI Server, we would like to share our tips for making SAS Enterprise BI Server implementation a smooth process.

INTRODUCTION

For over 30 years, the staff in the Office of Institutional Research at Western Kentucky University have used SAS for data analysis and reporting. Wanting to deliver information via the web, WKU installed the SAS® 9.2 Enterprise Business Intelligence Server. Following a steep learning curve and some educated guessing, IR developed a data portal for use by academic administrators at the University. In August 2010, IR unveiled the IR-Decision Support System to its campus.

Before we embarked on our adventure, IR staff talked to other institutions that had already implemented the SAS® Enterprise Business Intelligence Server. We discovered that each organization implemented EBI in a slightly different manner. While the other institutions were very helpful, we knew nothing about the process so it was difficult to ask useful questions. We did what we thought was best for us, learning along the way. Having implemented our system, we felt others might benefit from the lessons we learned during our journey.

BEFORE YOU START

Before you begin the process, there are a number of steps to take to prepare for the implementation. Here are our suggestions.

GET THE RIGHT PEOPLE ON YOUR TEAM

In *How the Mighty Fall: And Why Some Companies Never Give In,* Jim Collins (2009**,** pg. 56-57, 159-160) says one of the most important traits of organizations that succeed is having the right people in the key seats. Not having the right people and/or having the wrong people on your team can easily derail your project. WKU was fortunate enough to have the right mix of talent and skills on our staff to make the project a success. We had the technical expertise to learn how to use and expand upon the system; we had extensive knowledge of the data; we had long ago cleaned and warehoused our longitudinal data; and we had a good idea what our users wanted. In addition, we had talented people in IT, who helped us install and maintain the servers, as well as capture additional data for the system. We also had an enormous desire to make the project succeed.

INVOLVE THE PEOPLE AFFECTED BY BI

First, management has to be onboard. WKU had SAS present the Enterprise Business Intelligence Server to our Council of Academic Deans and Academic Affairs Executive Staff. Their support was critical to WKU acquiring the products. Enrollment Management and Graduate Studies were particularly supportive because they saw the benefits to their areas immediately. The deans also prodded us to get the system up and running because they were excited about getting their hands on the data.

Next, involve anyone whose workload will be affected by the project. IR relies on IT to warehouse our transactional data and support the servers necessary for the project. Having them onboard from the beginning helped us quickly resolve any data, warehousing, and server issues. We have met with IT many times during the process to discuss servers, data needs, roll out strategies, help desk considerations, best practices for implementation, and how the system fits with established systems. Having the support of IT made the project exponentially better than it could have been if we had tried to do everything on our own.

Finally, have power users and casual users test the system. We received some of our best ideas from our beta testers. We found simple things, such as adding a variable to flag certain groups of students (Honors, STEM majors, etc.) made the system much more useful. In response to our graphs, our beta testers quickly informed us that they would rather create their own graphs if we would just provide the data. We also found out which data they did not care about and were able to streamline our portal to include only features our users found useful.

USE THE HELP SAS PROVIDES

From project management to tech support, SAS can make the process run very smoothly. SAS has guided many organizations through the process, so why not make use of their expertise. WKU took advantage of the help provided by SAS sales staff, our project managers, our consultants, tech support, and other SAS employees we were able to work with throughout the process. Having the expertise at SAS to rely on provided a map for the journey—we just had to figure out how to read it.

PLAN TO EXPAND

Not knowing what we were getting into, WKU underestimated the potential user base and data volume during the sizing phase of the project. WKU actually had the 9.1.3 version ready to launch when we decided our sizing would not accommodate our growing number of users and data volume. While it delayed our implementation by a few months, we went through the sizing process once again. Eventually we bought the appropriate size servers, promoted to 9.2, and launched the system. Had we not re-evaluated our initial sizing, our system would have failed as soon as we launched it.

ANTICIPATE AND RESOLVE POTENTIAL CONFLICTS

Understandably, faculty, staff, and students at WKU get IR and IT confused, often thinking we are the same unit. In fact, both units write programs to provide data to users on campus. IR thought it best to talk to IT about the new system, what it would and would not do, and make sure we had any conflicts resolved before we got too far along on the project. Before we rolled the new system out, IR also met with IT about formally distinguishing the responsibilities of each unit. Clients across campus sometimes make the same data requests of both units, and then use the results that portray their unit in the best light. More often, clients have asked us to reconcile our numbers, which is always different because IR uses frozen data and IT uses transactional data.

Through our discussions, we further delineated that IR would handle all reporting of “official” data, particularly as it relates to students, courses, degrees, faculty, etc. IR would also handle all requests for trend data, as we take snapshots of our data each semester, while IT uses live data, which change constantly. IT remained responsible for addressing all requests for data to support day-to-day operations of the University. Sorting out the distinctions between the responsibilities of IR and IT proved to be invaluable when we rolled out our system. In almost every BI training session, we have been asked to explain the responsibilities of each unit.

NOW YOU ARE OFF AND RUNNING

Now that you have laid the groundwork for a smooth implementation, it is time to get to work. Here are the next steps we suggest.

PICK A CATCHY NAME FOR YOUR SYSTEM

While a name with “Business Intelligence” or “Portal” in the title would have been helpful, those options were not available to us at WKU. WKU already has a single sign-on portal, which we did not want clients to confuse with our system. Additionally, some faculty are offended by a suggestion that education is anything like business, so we wanted to steer clear of putting “business” in the title. While it sounded good at the time, we have since reconsidered the name of our system. We settled on a somewhat lackluster title that describes what the system does, but does not

immediately capture the user's attention—the IR-Decision Support System. We will eventually name our system something catchy and will have to change our system and documentation at that point.

GET THE APPROPRIATE TRAINING—THE SOONER, THE BETTER

Depending on your particular needs, intensive training on the Business Intelligence products will be beneficial. The training we found most helpful was the SAS Platform Administrator Fast Track. While we had experience in data cleaning, data warehousing and SAS programming, we had no experience administering a business intelligence platform. We also had staff participate in the training for SAS Data Integration Studio and Applied Analytics Using SAS Enterprise Miner.

TAKE ADVANTAGE OF CONSULTANTS

WKU had our consultant tackle complex projects for us. When you are new to developing business objects, it is beneficial to watch the process first before trying to build something yourself. This learning opportunity afforded us the ability to take on increasingly complex projects of our own as well as the ability to maintain the projects started by our SAS consultant. Another important benefit of using SAS consultants is that they see the project from a completely different view, which can lead to finding a better way to organize and structure your project.

DARE TO BE CREATIVE

Do not just use the system as-is. Implement a new theme across your web applications and use graphics, HTML snippets, and JavaScript to make the portal appealing to your organization. SAS made deploying a new theme much easier in 9.2 than in previous versions. A new theme allows you to customize colors and graphics included in the system. Additionally, custom HTML snippets and JavaScript provide added visual appeal to the standard look of the Information Delivery Portal.

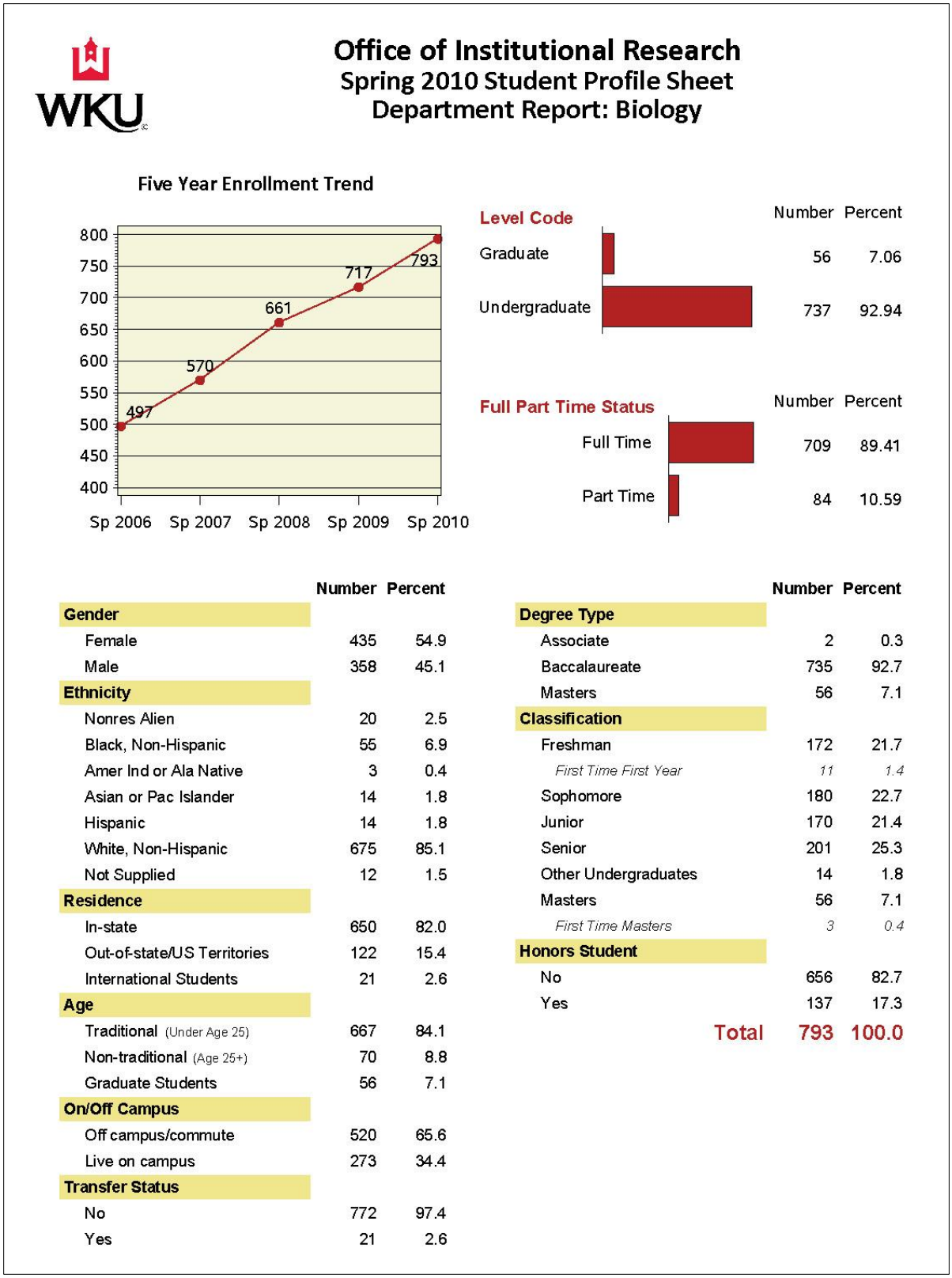
INVEST TIME IN DESIGN

Do not put too many reports on the system. No one wants to sift through pages of reports to find what they want. The beauty of OLAP cubes is the flexibility to use one base table to create tables using any of the hierarchies in the information map. However, you have to organize the system to best suit your organization's needs.

IR chose to rely more on OLAP cubes for a number of reasons. While stored processes are useful for producing print-ready reports, you have to guess at the format that will work for most people. Additionally, reports that use stored processes can only be modified by the IR staff. With OLAP cubes, users can move and filter the variables within the tables to meet their specific needs. No longer do we have to guess if departments would rather see their majors by ethnicity, then gender or by gender, then ethnicity. They can choose for themselves without talking to us.

There are times when stored processes are the best tool. Based on the typical data requests we receive, we created a number of print-ready reports that can report the data for the university, college, department or major. We have also spent the time to make the reports presentable using ODS Layout. For an example of our report, see Figure 1.

In addition to deciding the types of reports to use, WKU decided to create tabs for each of the major content areas we use in our reports. Thus, we have tabs for applicants, college readiness, courses, degrees, enrollment, faculty workload, persistence, program review, and survey results. We also have unit specific tabs for colleges and other units, which only those units can see. The unit-specific tabs provide dashboards specific to that unit. The tabs also use reports and tables from content areas, but isolate the data so that only the data for the specific unit is shown (e.g., honors students, graduate students, majors in the College of Business). Additionally, unit-requested reports have been added to some unit tabs. A typical page on the WKU IR-Decision Support System is shown in Figure 2.



Office of Institutional Research
Spring 2010 Student Profile Sheet
Department Report: Biology

Five Year Enrollment Trend

Level Code	Number	Percent
Graduate	56	7.06
Undergraduate	737	92.94

Full Part Time Status	Number	Percent
Full Time	709	89.41
Part Time	84	10.59

	Number	Percent
Gender		
Female	435	54.9
Male	358	45.1
Ethnicity		
Nonres Alien	20	2.5
Black, Non-Hispanic	55	6.9
Amer Ind or Ala Native	3	0.4
Asian or Pac Islander	14	1.8
Hispanic	14	1.8
White, Non-Hispanic	675	85.1
Not Supplied	12	1.5
Residence		
In-state	650	82.0
Out-of-state/US Territories	122	15.4
International Students	21	2.6
Age		
Traditional (Under Age 25)	667	84.1
Non-traditional (Age 25+)	70	8.8
Graduate Students	56	7.1
On/Off Campus		
Off campus/commute	520	65.6
Live on campus	273	34.4
Transfer Status		
No	772	97.4
Yes	21	2.6

	Number	Percent
Degree Type		
Associate	2	0.3
Baccalaureate	735	92.7
Masters	56	7.1
Classification		
Freshman	172	21.7
First Time First Year	*11*	*1.4*
Sophomore	180	22.7
Junior	170	21.4
Senior	201	25.3
Other Undergraduates	14	1.8
Masters	56	7.1
First Time Masters	*3*	*0.4*
Honors Student		
No	656	82.7
Yes	137	17.3
Total	**793**	**100.0**

Figure 1. Example of Stored Process Results Using ODS Layout

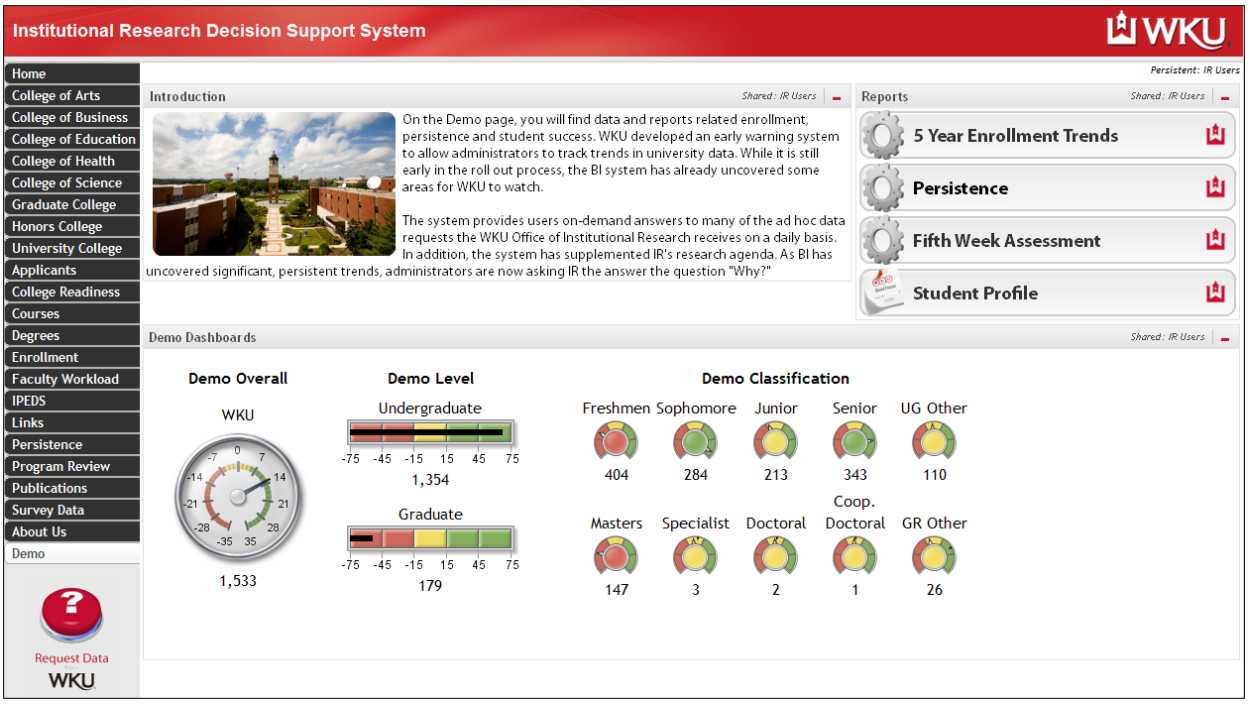


Figure 2. Typical Page on WKU IR-Decision Support System

PROVIDE DOCUMENTATION

We assumed our users were unfamiliar with the data on the system. Therefore, we provided users with documentation in a number of ways. First, we included a Documentation selection in the drop-down box of the Table of Contents of reports built using OLAP cubes. (See Figure 3.)

Figure 3. Example of Documentation Selection in Table of Contents Drop-Down Box

Selecting the Documentation report brings up a webpage that explains exactly what the data tables show and which measures and variables are available for use in the report. The documentation also includes definitions of the variables, as well as ranges for numeric variables. A sample of the documentation is shown in Figure 4.

WKU Institutional Research Decision Support System

Report Documentation
Page 2

5 Year Enrollment Trends

The tables in the Enrollment Status Report show enrollment from the current week to the same week last year. The UNIVERSITY report shows student HEADCOUNT, while the MAJORS report shows the counts of MAJORS of students enrolled by college, department and major. In the UNIVERSITY report, each enrolled student is counted only once, regardless of how many majors they have declared. This report should be used to find the actual number of students in a category and to calculate measures such as average ACT score.

In the MAJORS report, each enrolled student is counted in each major he or she has declared. This report should be used to show the number of MAJORS, not students, each college and department has enrolled this week compared to the same week last year. Demographic variables such as gender and race and academic variables such as ACT, GRE or GPA should be used only at the major level in the MAJORS report or in the UNIVERSITY report. Using these variables at the college or department level in the MAJORS report will overstate the numbers if students have declared multiple majors within a college or department.

Variables available for use:

ACA Coll Dept Lev Maj – Shows majors by college, department, level and major.
ACA Univ Level Class – Shows majors by level (Undergraduate or Graduate) and classification (freshman, sophomore, junior, etc.).
Ethnicity – Shows majors by ethnicity (International Students are shown as Nonres Alien).
First Generation College Student - Shows students who are first generation college students (Yes/No).
First–time Student – Shows first–time students in a major, excluding first-time transfer students.
Full or Part Time – Shows students by full or part–time enrollment status for the term. (Full-time enrollment consists of 12 credit hours/semester for undergraduate students and nine credit hours/semester for graduate students.

Figure 4. Sample of Documentation for Tables Using OLAP Cubes

PREPARE THOUGHTFUL TRAINING MATERIALS

WKU took the time to develop both a quick Navigation Guide and an extensive Users' Manual. We demonstrated the system for IT prior to rolling it out. Based on their experience, they suggested we make sure we prepared a simplistic and thorough Users' Manual and let users walk away with it in their hands after training. We have made both the Users' Manual and Navigation Guide available on the portal. We also send hard copies home with each person who comes to training. Our Users' Guide walks users through the portal step-by-step, providing tips and addressing possible problems. It also provides exercises and solutions at the end.

AFTER IMPLEMENTATION

Once you have implemented the system, there are a number of things to keep in mind. Here is what we found helpful.

ACT SWIFTLY ON USER FEEDBACK

Incorporate valid user suggestions quickly. Respond to each suggestion. When users see that you have heard and acted upon their suggestions, they continue to provide feedback as they use the system. Even if you have to let them know that their suggestion is on your to-do list or will not be implemented in the near future, they at least know you have heard them and are taking their input seriously.

KEEP A LOG OF ALL SUGGESTIONS

WKU used the roll out sessions to get feedback on our system. As we presented the system to each college and unit, we wrote down all of the suggestions users made. We keep a running list of suggestions and regularly evaluate the list by assigning each suggestion a priority and due date. Additionally, we have included a place on the portal for users to provide comments (See Figure 5). Once a user submits a comment, it goes into our database. The users can also see a running list of the comments they have provided to us.

Figure 5. Comments Box on WKU Portal Page

CONCLUSION

While our journey has just begun, IR expects our portal to become even more successful as time goes on. Once we have developed and launched the tables and reports requested by our users, we plan to begin using predictive analytics to create early warning systems to flag students at risk of not succeeding. While it is nice to know where you have been, it is often more important to see where you are going.

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RECOMMENDED READING

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