# **Tennessee Board of Regents**

# **Business Intelligence**Initiative – KPI Customization

**KPI Import and Customization Instructions** 

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March 2011

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## **Known Customization Issues When Using Shared Argos Exports**

You may have difficulty editing or running the imported Argos exports for the Business Intelligence KPIs (key performance indicators) that are contained in the BI downloads. There are two known modification points to be aware of when using an Argos datablock which comes from other campuses.

#### **Security**

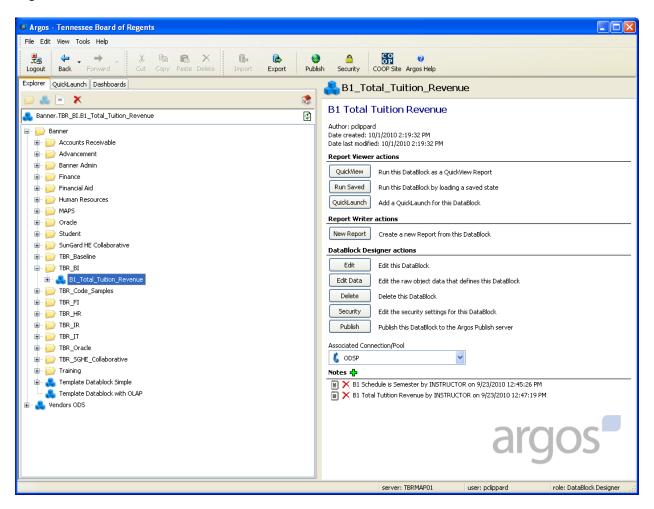
Each campus may have a different Argos User security methodology. For example if at the Tennessee State University campus the Argos users are name TSU\_USER1 and the Motlow State Community Collage the Argos users are named MSCC\_USER1, when the Argos datablock is imported to a receiving school, the import will generate an error message. This is because Argos User name is different.

## Steps for Importing and Using the Business Intelligence KPI's Argos DataBlocks

- 1. Import the Argos export file to your Argos projects to review the logic in the datablock. See the *Updating the Security on the Datablock After Importing* section in this document.
- 2. Review the KPI chart creation graphics notes in the *Chart and Graphics Preferences* section of this document. Make the necessary changes to reflect your campus' preferences.
- 3. Note that the KPI logic in Argos may need to be modified at each school to represent their specific codes. Instructions for modifying each the KPIs can be found in the *Key Performance Indicators Definitions & Customization Notes* section of this document.
- 4. Common Functions have been written and shared in this document and in the downloaded files for each release of newly created KPIs. See the *Common Functions* section of this document.
- 5. All errors found in the sql code and shared scripts should be reported to the <a href="mailto:BIDWTech@tbr.edu">BIDWTech@tbr.edu</a> as soon as they are discovered so that corrections and clarifications can be published in a timely manner.

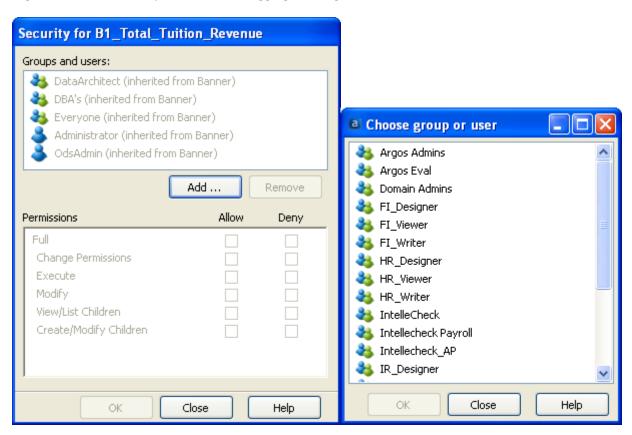
## Updating the Security on the Datablock After Importing

Because not all schools have Argos security set up similarly, after importing the Argos export for any given KPI, you will need to modify the security group – or change the security group properties within Argos.



- 1. Right click the datablock after importing it.
- 2. Select Security from the dropdown
- 3. Click Add... a security group
- 4. Select the user or group from the Choose group or user window
- 5. Check the Allow and Deny options as required.

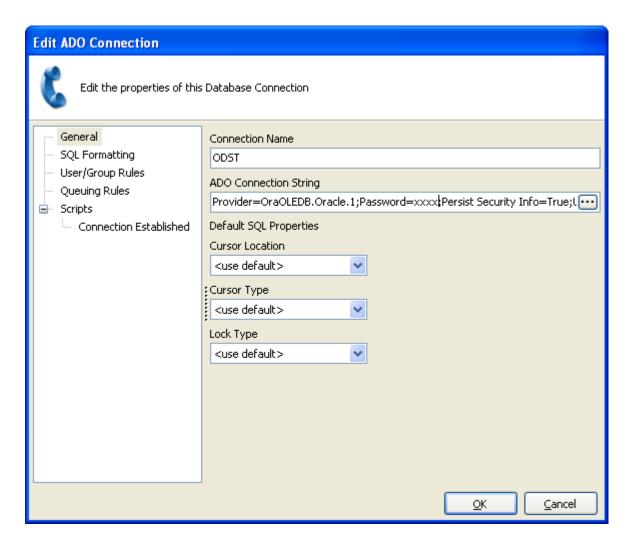
For example, the TBR has a FI\_Designer group in active directory so each TBR Finance staff who are datablock designers are added to Argos FI\_Designer group in active directory and can then use their regualr NT account and passwod when logging into Argos.



# **ODS Instance Named Differently**

In the connection string of the Argos datablock the Operational Data Store (ODS) database as a different name that from where the Argos export originated. For example, TSU may call their production ODS database ODSP while the another campus may call their production ODS database ODSP8.

The ODS instance is name in the Argos MAPS server in the ADO Connection string as in the example below.



## **Key Performance Metric (KPI) Naming Conventions**

## Creating Argos Datablock

When creating the KPIs datablock using Argos, the recommended naming convention is:

MetricID\_MetricName

Such as

B1 Total Tuition Revenue

## Creating Argos Export files

When creating the Argos export for uploading to the TBR staging area, the recommended naming convention is:

MetricID MetricName SchoolIDYYYYMMDD.defaultArgosExportExtension

Such as

BI\_Total\_Tuition Revenue APSU20110204.argosexport

## **Uploading & Downloading KPIs - TBR BI Shared Repository**

Upon completion of a KPI, its accompanying .argosexport files and associated documentation should be uploaded to the TBR BI stage folder.

In the campus' stage server under the home directory is a link to the TBR\_BI staging area. Within the TBR\_BI link there is a BI Projects directory for receiving your .argosexport files and documentation.

Do not delete the TBR\_BI directory which has been placed as a link under your stage area home directory.

TBR\_BI

Stage area for delivery of KPIs from the TBR central KPI repository to the campuses. Campuses have read access only.

BI\_PROJECT

Stage area for delivery of KPIs from the campuses to the TBR central KPI repository. Campuses have write access only.

## **Quality Assurance**

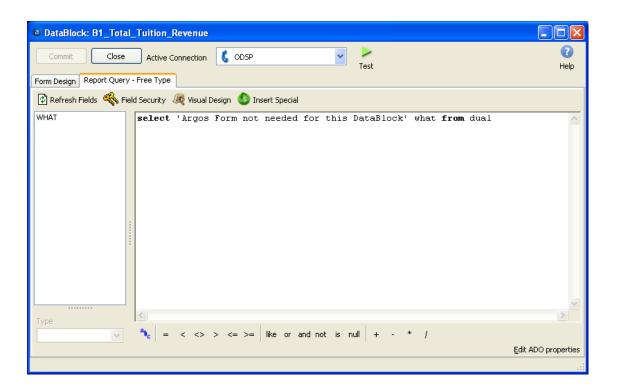
Every effort has been made to clean-up any testing codes or links during the roll-out process. However, you may occasionally find a bit of test garbage forgotten and left behind, our apologies for such house-keeping mistakes.

For instance, if you run into a forgotten bit of test code please notify the <a href="mailto:BIDWTech@tbr.edu">BIDWTech@tbr.edu</a> contact that such an error was found as all documentation and associated instructions will need to be corrected and reissued.

## **Argos Banded Report Option Requirements**

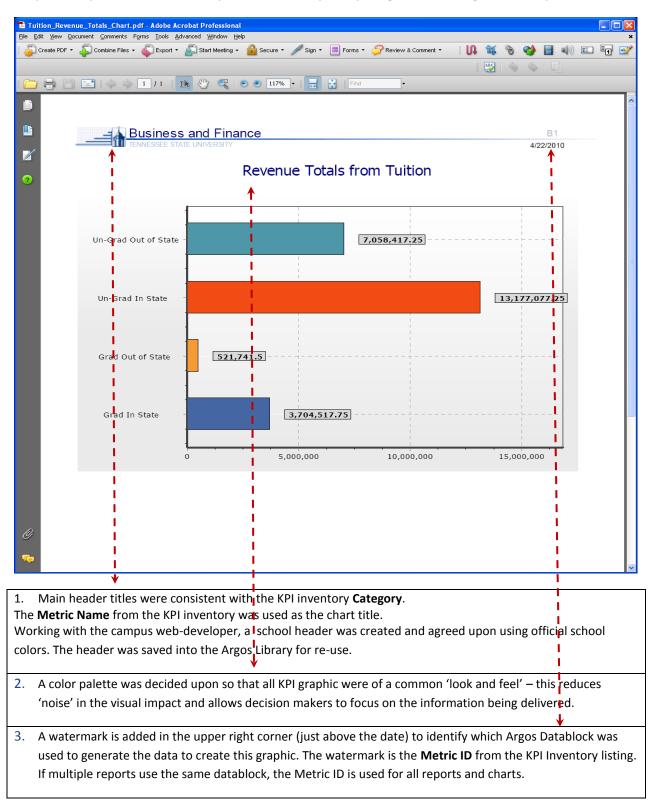
What may appear to be remnants of queries built for testing may actually be a functional requirement of the reporting Argos tool.

Please note that the Report Query – Free Type edit window may have a statement which should remain because we need to select something in the Report Query in order for the Argos banded report option to appear.



## **Chart and Graphics Preferences**

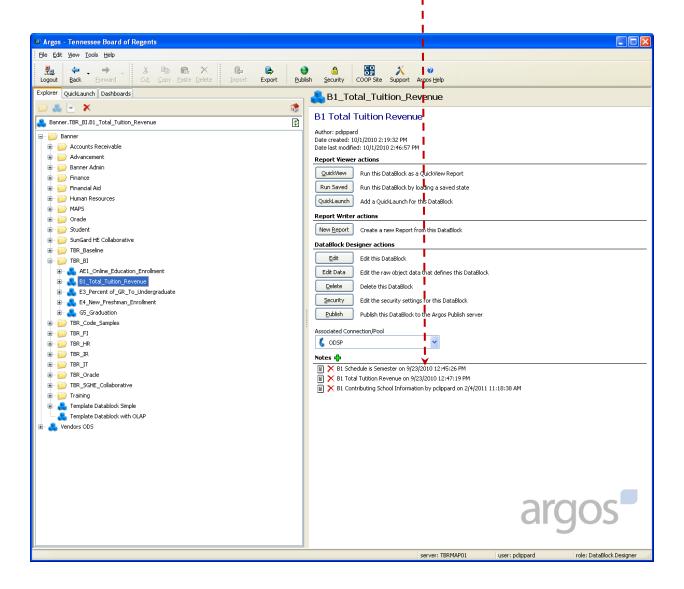
Graphic and preferences are left up to each school participating, the following is an example.



## Noteworthy - Adding Notation to the Argos Datablock

Each Argos datablock will have three notes added to inform the users of 1) the requested schedule to produce the chart or report and 2) the detailed documentation regarding dimensions or calculation statements taken directly from the original KPI Inventory list and 3) the contributing school BI Team information.

These should be modified as necessary at each school when customizing the datablock for local considerations.



## **Key Performance Indicators - Definitions & Customization**

The following KPIs are defined below and represent only the KPIs that have been released as of the most recent date of this document. New KPIs will be added to this document as they are released.

The following KPIs have been releases to the campuses for testing and/or production implementation. In this document you will find the Metric Category, Metric Title, Metric ID, Metric Description, Metric Calculation, requested Unit of Measure, Metric Source, Metric Dimension, Metric Frequency and Related Objective if one was given in the original KPI Repository Listing created by Tennessee State University and the Deloitte Consulting firm.

Additionally, the KPI definition also contains the ODS source used to extracted the KPI information form the data warehouse.

Any issues found during testing should be reported to the <a href="mailto:BIDWTech@tbr.edu">BIDWTech@tbr.edu</a> address.

## Key Performance Indicators Released To Date

#### **Admissions**

A6 & A7 A6 Freshmen SAT and A7 Freshmen ACT

A8 New Freshman High School GPA

A10 Mean transfer GPA

#### **Access to Education - Distance Education**

AE1 Online Education Enrollment

#### **Business & Finance**

B1 Tuition Revenue

B1 Tuition Revenue by Term (Additional metric found during development)

#### Development

D1 Alumni Donations and Gift Summary

#### **Enrollment**

E3 Percentage of Graduate to Undergraduate Students

E4 New Freshman Enrollment

## **Graduation**

G5 Degrees Awarded by Level or Field of Study

**KPI Metric ID:** A6 & A7 Freshmen SAT and Freshmen ACT

Metric Category: Admissions

Metric Title: A6 Freshmen SAT and A7 Freshmen ACT

**Metric Description:** Measures the average SAT and ACT score for the new freshman class

**Metric Calculation:** Average SAT and ACT score for incoming freshman class

Unit of Measure: SAT scores and ACT scores
Metric Source: Best Practice Analysis (G)

Metric Dimension: Gender, Race, Student Type (PT/FT), Zip Code

Metric Frequency: Annually

**Related Objective:** Admit and retain qualified and motivated students

ODS Source: ADMISSIONS\_APPLICATIONS, ADMISSIONS\_DECISION, PRE\_STUDENT, PERSON,

**ENROLLMENT** 

Argos DataBlock: A6-A7\_New\_Freshman\_SAT\_ACT

Datablock points for possible modification include the following:

**KPI Metric ID:** A8 New Freshman High School GPA

Metric Category: Admissions

Metric Title: New Freshman High school GPA

**Metric Description:** Measures the average Grade Point Average for incoming freshmen class

Metric Calculation: Average high school GPA of graduating class

Unit of Measure: GPA

Metric Source: Best Practice Analysis (G)

Metric Dimension: Gender, Race, Student Type (PT/FT), Zip Code

Metric Frequency: Annually

**Related Objective:** Admit and retain qualified and motivated students

**ODS Source:** ADMISSIONS\_APPLICATIONS, ADMISSIONS\_DECISION, PRE\_STUDENT, PERSON,

**ENROLLMENT** 

Argos DataBlock: A8\_New\_Freshman\_Highschool\_GPA

Datablock points for possible modification include the following:

**KPI Metric ID:** A10 Mean Transfer GPA

Metric Category: Admissions

Metric Title: Mean transfer GPA

**Metric Description:** The mean grade point average of fall new transfer students

Metric Calculation: Sum of all donation dollars

Unit of Measure: Number

Metric Source: Best Practice Analysis (I)

Metric Dimension: Gender, Race, Student Type (PT/FT), Zip Code

Metric Frequency: Annually

ODS Source: ADMISSIONS\_APPLICATIONS, PRE\_STUDENT, PERSON, ENROLLMENT, GPA

Argos DataBlock: A10\_Mean\_Transfer\_GPA

## Datablock points for possible modification include the following:

**KPI Metric ID: AE1 Online Education Enrollment** 

Metric Category: Access to Education - Distance Education

Metric Title: Online Education Enrollment

**Metric Description:** Measures the amount of students that are enrolled for online courses

Metric Calculation: Number of students that are enrolled in online courses

**Unit of Measure:** Count students

Metric Source: NACUBO, Academic Master Plan

Metric Dimension: Academic Level, Student type (FT, PT), Zip Code, Programs

Metric Frequency: Semester

**ODS Source: STUDENT\_COURSE, ENROLLMENT** 

Argos DataBlock: AE1\_Online\_Education\_Enrollment

#### Datablock points for possible modification include the following:

#### 1. Argos variable SQL College

The variable will require the function TBRCREMGR.F\_BI\_CURTERM or similar to calculate current term. See the addendum to this document for a discussion on the common functions created for the Argos BI datablocks.

#### 2. Argos variable SQL Department

The variable will require the function TBRCREMGR.F\_BI\_CURTERM or similar to calculate current term. See the addendum to this document for a discussion on the common functions created for the Argos BI datablocks.

## 3. Argos variable SQL OnlineStudent Enrollment

The variable will require the function TBRCREMGR.F\_BI\_CURTERM or similar to calculate current term. See the addendum to this document for a discussion on the common functions created for the Argos BI datablocks.

#### 4. Argos variable SQL Subject

The variable will require the function TBRCREMGR.F\_BI\_CURTERM or similar to calculate current term. See the addendum to this document for a discussion on the common functions created for the Argos BI datablocks.

**KPI Metric ID: B1 Revenue from Tuition** 

Metric Category:Business & FinanceMetric Title:Tuition revenueMetric Description:Revenue from tuitionMetric Calculation:Total dollars in tuition

**Unit of Measure:** Dollars

**Metric Source:** Document provided by Dr. Burch-Simms.

Metric Dimension: Term, Department, Academic Level, Course Section, Credit Hour, Program, In-

State students, Out of State Students

Metric Frequency: Semester

**ODS Source:** RECEIVABLE\_ACCOUNT\_DETAIL

Argos DataBlock: B1\_Total\_Tuition Revenue

### Datablock points for possible modification include the following:

## 1) Argos variable SQL revenue by tuition

The DETAIL\_CODE column values may change from school to school. Please review the following values and modify the Argos datablock as necessary. Please verify the correct code and values with your functional offices and data owners.

Datablock author value	Modified to/interpreted as		
'TUGM'	decoded as 'UG In State		
'TUSM'	decoded as 'UG In State		
'TUGO'	decoded as 'UG Out State		
'TUGS'	decoded as 'UG Out State		
'TGRM'	decoded as 'GR In State		
'TGSF'	decoded as 'GR In State		
'TGRO'	decoded as 'GR Out State		
'TGRS'	decoded as 'GR Out State		
'TER1'	decoded as 'eRate UG		
'TER2'	decoded as 'eRate UG		
'TER3'	decoded as 'eRate GR		
'TER4'	decoded as 'eRate GR		
'TER4'	decoded as 'eRate GR		

**KPI Metric ID:** B1 \* Tuition Revenue by Term

Metric Category: Business & Finance

Metric Title: Tuition Revenue by Term- additional metric found during development

**Metric Description:** Measures revenue from tuition (by term)

Metric Calculation: Total dollars in tuition

**Unit of Measure:** Dollars

**Metric Source:** Document provided by Dr. Burch-Simms

Metric Dimension: Term, Department, Academic Level, Course Section, Credit Hour, Program,

In-State students, Out of State Students

Metric Frequency: Semester

**ODS Source:** RECEIVABLE \_ACCOUNT\_DETAIL

Argos DataBlock: B1\_Total\_Tuition\_Revenue\_by\_Term

Datablock points for possible modification include the following:

**KPI Metric ID:** D1 Alumni Donations and Gift Summary

Metric Category: Development

Metric Title: Alumni Donations and Gift Summary

Metric Description: Total alumni donation \$'s

Metric Calculation: Sum of all donation dollars

**Unit of Measure:** Dollars

Metric Source: NACUBO/Interview

Metric Dimension: New Donors, Repeat Donors, Type of Gift

Metric Frequency: Quarterly

**Related Objective:** Increase the three year money average of gift income by 400%

by fiscal year 2010

**ODS Source:** GIFT

Argos DataBlock: D1\_Alumni\_Donations\_and\_Gift\_Summary

### Datablock points for possible modification include the following:

The datablock will require the BI Common Function TBRCREMGR. F\_BI\_DiffFiscalYr or similar to calculate the two Fiscal years back and the current year as well. See the addendum to this document for a discussion on the common functions created for the Argos BI datablocks.

**KPI Metric ID:** E3 Percentage of Graduate to Undergraduate Students

Metric Category: Enrollment

**Metric Title:** Percentage of graduate to undergraduate students

Metric Description: Measures the percent split between graduate and undergraduate students

Metric Calculation: Graduate Students/Graduate + Undergrad class

**Unit of Measure:** Percentage

Metric Source: Academic Master Plan

Metric Dimension: Gender, Race, Student Type (e.g. Full Time, Part Time), Zip Code, Distance

Education

Metric Frequency: Annually

**ODS Source:** MST\_ENROLLMENT, MST\_GENERAL\_STUDENT

Argos DataBlock: E3\_Percent\_of\_GR\_To\_Undergraduate

#### Datablock points for possible modification include the following:

The datablock will require the function TBRCREMGR.F\_BI\_CURTERM or similar to calculate current term. See the addendum to this document for a discussion on the common functions created for the Argos BI datablocks.

**KPI Metric ID:** E4 New Freshman Enrollment

Metric Category: Enrollment

Metric Title: New Freshman Enrollment

Metric Description: Measures the fall new freshmen enrollment number

Metric Calculation: Total number of freshman enrolled

**Unit of Measure:** Number

Metric Source: Best Practice Analysis

Metric Dimension: Gender, Race, Student Type (e.g. Full Time, Part Time), Zip Code, Distance

Education

Metric Frequency: Annually

ODS Source: ADMISSIONS APPLICATION, ADMISSIONS DECISION, ENROLLMENT, PERSON

**Argos DataBlock:** E3\_New\_Freshman\_Enrollment

### Datablock points for possible modification include the following:

The datablock will require the function TBRCREMGR.F\_BI\_CURTERM or similar to calculate current term. See the addendum to this document for a discussion on the common functions created for the Argos BI datablocks.

**KPI Metric ID:** G5 Degrees Awarded by Level or Field of Study

Metric Category: Graduation

Metric Title:Degrees Awarded by level or field of studyMetric Description:Measures the degrees granted by programMetric Calculation:Number of Degrees Granted to Students

Unit of Measure: Number Metric Source: NACUBO

Metric Dimension: Gender, Race, Student Type (e.g. Full Time, Part Time), Zip Code, Distance

Education

Metric Frequency: Semester

**ODS Source:** ACADEMIC\_OUTCOME

Argos DataBlock: G5\_Graduation

### Datablock points for possible modification include the following:

The datablock will require the function TBRCREMGR.F\_BI\_CURTERM or similar to calculate current term. See the addendum to this document for a discussion on the common functions created for the Argos BI datablocks.

## Common BI Functions

Custom Functions have been scripted and modified for generic use. They are in the notepad document BI\_CommonFunctions.txt which can be found in the BIDW file gallery at the TBR IT-Info Wiki page.

The following functions were created in the process of designing and coding out the key performance indicators used in the TBR-TSU Business Intelligence project.

The functions are being offered for use where appropriate in creating additional performance metrics. They are also offered as a point of communication so that all schools creating performance metrics may test the functions and begin dialog on these and other required common functions so that all TBR institutions report performance measurement in a consistent fashion.

All custom Business Intelligence functions should be created in the <u>TBRCREMGR</u> schema in the ODS instance.

By placing the BI functions in the custom schema (TBRCREMGR), any future patching or upgrades to the ODS for the baseline product or enhancements by the vendor to the baseline product will not impact the Tennessee modifications to the ODS at our institutions.

#### SAFE TO NUMBER FUNCTION

#### **Purpose:**

To prevent an error from occurring when utilizing aggregate functions on an invalid number.

And to identify the records which contain invalid numbers.

#### **Description:**

The to\_number function throws an error when passed an invalid number.

The safe to number function catches the error and returns a null.

```
create or replace function safe_to_number(txt varchar2) return number is

begin

return to_number(txt);

exception when value_error then return null;

end safe_to_number;
```

```
Current FISCAL YEAR

create or replace FUNCTION F_BI_CurFiscalYear RETURN VARCHAR IS fyear varchar(10);

begin

select

case when to_char(sysdate,'MM/DD/YYYY') >= '07/01/'||to_char(sysdate,'YYYY') then

to_number(to_char(sysdate,'YYYY'))+1

else to_number(to_char(sysdate,'YYYY')))

end into fyear

from dual;

return fyear;

END;
```

#### **DEGREE AWARD YEAR**

```
create or replace FUNCTION F_BI_DEG_AWARDYEAR RETURN VARCHAR IS AWARDYEAR varchar(10);
begin

select

case when (select to_char(sysdate, 'MMDD') from dual) < '0701' then

(select (to_char(sysdate-770, 'YY'))||(to_char(sysdate-365, 'YY')) as "PreviousAcademicYear" from dual)

else (select (to_char(sysdate-365, 'YY'))||(to_char(sysdate, 'YY')) as "CurrentAcademicYear" from dual)

end into AWARDYEAR

from dual;

return AWARDYEAR;

END;
```

## DIFF ACADEMIC YEAR (without STVTERM imported into the ODS) F\_BI\_Diff\_AcYear('MM/DD',0)

#### **Purpose:**

To calculate academic year x number of years from the current academic year without STVTERM having been imported into the ODS.

#### **Description:**

The function accepts an integer value x and the month and day for the beginning of the fall semester. Where x represents the number of years from the current academic year and –x represents a year in the past.

```
create or replace
FUNCTION F BI Diff AcYear(fall begin date varchar, yrsBack int) RETURN VARCHAR IS calc year varchar(10);
BEGIN
select case
   when sysdate+365*(yrsBack) > =
     to_date(concat(fall_begin_date,concat('/',to_char(sysdate+365*(yrsBack),'yyyy'))),'mm/dd/yyyy')
      and
     sysdate + 365*(yrsBack) < to_date(('01/01/'||to_char(sysdate + 365*(yrsBack + 1), 'yyyy')), 'mm/dd/yyyy')
     then
        to_char(sysdate+365*(yrsBack),'yy')||to_char(sysdate+365*(yrsBack+1),'yy')
      else
        to_char(sysdate+365*(yrsBack-1),'yy')||to_char(sysdate+365*(yrsBack),'yy')
   end
into calc_year from dual;
 return calc_year;
END;
```

## **DIFF ACADEMIC YEAR (with STVTERM imported into the ODS)** *F\_BI\_DiffAcademic\_year(yrsBack int)*

#### Purpose:

To calculate academic year x number of years from the current academic year with STVTERM imported into the ODS.

#### **Description:**

The function accepts an integer value x where x represents the number of years from the current academic year and –x represents a year in the past. If the current date falls between semesters add two months to current date and then calculate the current academic year.

#### **Dependencies:**

This function depends on the existence of STVTERM in the ODS. We had imported it from PROD.

## **Diff Term** FUNCTION F\_BI\_DiffTerm(int)

#### **Purpose:**

To calculate academic period x number of years from the current academic period.

#### **Description:**

The function accepts an integer value x where x represents the number of years from the current academic period and –x represents a year in the past. If the current date falls between semesters add two months to current date and then calculate the current academic period.

### **Dependencies:**

This function depends on the existence of STVTERM in the ODS. We had imported it from PROD.

```
create or replace FUNCTION F_BI_DiffTerm(yrsBack int) RETURN VARCHAR IS

term varchar(10);

begin

select nvI((SELECT stvterm.stvterm_code
    from STVTERM
    where stvterm.stvterm_start_date <= sysdate-(365*yrsBack) and stvterm.STVTERM_END_DATE >= sysdate-(365*yrsBack)),
    (SELECT stvterm.stvterm_code
    from STVTERM
    where stvterm.stvterm_code
    from STVTERM
    where stvterm.stvterm_start_date <= add_months(sysdate-(365*yrsBack),2) and stvterm.STVTERM_END_DATE >= add_months(sysdate-(365*yrsBack),2))
    ) into term from dual;

return term;
END;
```

## **Volunteering for the TBR Business Intelligence Initiative**

## **Mission Statement**

The Business Intelligence Initiative is a collaborative project as it is a collaborative activity between the universities, the community colleges and the Tennessee Board of Regents (TBR) to promote, design and deliver data driven decision support metrics for strategic management of the higher education institutions that comprise the TBR.

## **Commitment**

- Currently over 200 Key Performance Indicators (KPIs) have been identified during a collaborative
  effort between the Tennessee State University (TSU) and the Deloitte Consulting firm in Nashville
  Tennessee. These KPIs are the basis of the Business Intelligence Initiative project that is underway
  within then TBR and its member institutions.
- The list of identified KPIs is referred to as the KPI Repository List.
- All participation is on a voluntary basis but does involve a guaranteed level of commitment from schools who do volunteer.
- The level of commitment involves each volunteering school to accept an assignment of at least five different KPIs from the KPI Repository List for development, and to produce those five KPIs within a 90 day period. Extenuating circumstances at the volunteering campuses such as heavy workloads during upgrades and new system implementations are always given consideration for extending the development time beyond the 90 days.
- Priority of KPIs assigned for development can be agreed upon by the participants, or can follow the currently identified priority in the *KPI Repository List*.
- All KPIs created from each of the volunteering schools will be uploaded to a central repository so
  they can be reviewed for technical compliance with the most recent version of the Argos reporting
  tool. From the TBR central repository, the KPIs will be shared with associate campuses for review
  and quality assurance of the data and accuracy of the measurement.

Since the original research emanated from a four year school campus, the community colleges may find an analysis gap in the metrics listed. Any newly identified KPIs specific to the community colleges will be added to the *KPI Repository List* and worked as part of the Business Intelligence Initiative.

## Access to the TBR KPI Repository

The TBR uses its Information Technology Wiki for distribution of the Business Intelligence (BI) Initiative scripts and documentation. The Business Intelligence Initiative is part of the Business Intelligence and Data Warehouse (BIDW) project.

Special areas within the web-site called *File Galleries* are used to store the BI scripts and documentation. The BI Initiative download files are listed in the *BIDW File Gallery*.

Users can create an account at the TBR ITINFO home page login screen. However, access to individual Business Intelligence and Data Warehousing (BIDW) file galleries is granted to the account via an email request.

Once you have created your TBR ITINFO account, send an email to the <a href="mailto:BIDWTech@tbr.edu">BIDWTech@tbr.edu</a> with **BIDW**Gallery in the subject line to request being added to the BIDW Gallery group.

## http://itinfo.tbr.edu/itinfo/tiki-index.php



# **Contact Information**

Questions regarding this document should be emailed to <a href="mailto:BIDWTech@tbr.edu">BIDWTech@tbr.edu</a>