Reporting in SLcM Using CDS Views

THE UNIVERSITY OF MISSISSIPPI & SAP

2016 HERUG CONFERENCE – SESSION S-2

Agenda

Reporting Requirements

What are CDS Views?

UM's Collaboration with SAP

SAP Deliverables

Performance Metrics

Consuming CDS Views

SLcM Reporting Tool (ZCM_STUDENT_INFO_C)

Selection Methods Used by UM

Selection Method	Implementation Name	Selection Method Description
ZST4	ZSTUDENTSELMETHOD4	Admissions and/or Enrolled Status
ZCAW	ZSTUDENTSELMETHO34	Students with Change in Academic Work (grade, ED)
ZS36	ZSTUDENTSELMETHO36	By Classification
ZST3	ZSTUDENTSELMETHOD3	By Admissions Data
ZST1	ZSTUDENTSELMETHOD1	By Admissions Data
ZST2	ZSTUDENTSELMETHOD2	Selection by Orientation Session
ZST6	ZSTUDENTSELMETHOD6	By registration and booking options
ZST8	ZSTUDENTSELMETHOD8	Students by Status/Attribute
ZS14	ZSTUDENTSELMETHO14	Select students by campus
ZS40	ZSTUDENTSELMETHO40	Selection by Retention Cohort
ZS18	ZSTUDENTSELMETHOD18	Select Graduates
ZS19	ZSTUDENTSELMETHOD19	Applied for graduation
ZST5	ZSTUDENTSELMETHOD5	Prospect Characteristics
ZS11	ZSTUDENTSELMETHO11	By greek affiliation
ZS12	ZSTUDENTSELMETHO12	Select students by advisor
ZS13	ZSTUDENTSELMETHO13	By grade in course
ZS15	ZSTUDENTSELMETHO15	By campus
ZS16	ZSTUDENTSELMETHO16	Veteran's Number and Status
ZS17	ZSTUDENTSELMETHO17	Admitted stud for webID letter
ZS20	ZSTUDENTSELMETHO20	Admitted students for Orientation letter

SLcM Fill Functions Used by UM

Function Module	Description
Z_STUDENT_FILL_DIG_CONTACTS	Get registration windows for this student
Z_STUDENT_FILL_HS_ORIENT	Get housing information for Orientation Session
Z_STUDENT_FILL_IMMUN	Get Student Immunization
Z_STUDENT_FILL_REQ_CATALOG	Get registration windows for this student
Z_STUDENT_FILL_ADDR	Get addresses for this student
Z_STUDENT_FILL_ADM	Get admissions data for extracts
Z_STUDENT_FILL_ADVISOR	Get advisor data
Z_STUDENT_FILL_ATTR	Get attributes for this student
Z_STUDENT_FILL_BASIC	Get student nationality, gender, marital status, residency, religion, ethnicity, campus, pernr, email information
Z_STUDENT_FILL_HOLDS	Get statuses and holds for this student
Z_STUDENT_FILL_MIN	Get minimal student information
Z_STUDENT_FILL_MIN2	Get name, gender, ssn, email, cell phone data for students
Z_STUDENT_FILL_NOTES	Get student notes for extracts
Z_STUDENT_FILL_ORIENTATION	Get orientation assignment
Z_STUDENT_FILL_ORIENTATION_EX1	Get summary data used by orientation advisor
Z_STUDENT_FILL_PROSPECT	Get prospect data for extracts
Z_STUDENT_FILL_RP	Get related persons for extracts
Z_STUDENT_FILL_STUDY	Get studies information
Z_STUDENT_FILL_TEST_SCORES	Get test scores for extracts
Z_STUDENT_FILL_TRANSCRIPTS	Get transcripts for extracts
Z_STUDENT_FILL_WINDOWS	Get registration windows for this student
Z_STUDENT_FILL_ADADV	Get additional advisor info for students
Z_STUDENT_FILL_ADVISOR_MULTI	Get advisor data
Z_STUDENT_FILL_MISC	Get student greek, sports, religion, ethnicity information
Z_STUDENT_FILL_STUDY_BY_TERM	Get studies information by term
Z_STUDENT_FILL_WEBID	Get webid
Z_STUDENT_FILL_MIN3	Get minimal student information with email

CDS Views

What are CDS Views?

Simplify

Core Data Services

CDS

DDL

SQL
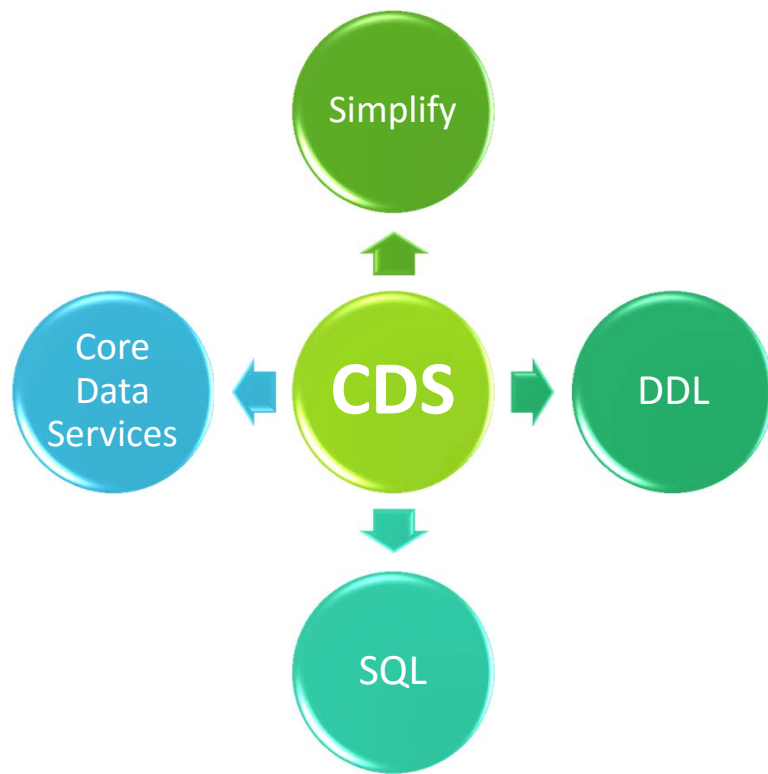
Simplifies and harmonizes the way you define and consume data models

An enhancement of SQL

Provides a Data Definition Language

Key Features of CDS Views

Define semantically rich database tables/views

Define user-defined types in the database

Annotations to enrich the data models with additional domain specific metadata

Associations on a conceptual level, replacing joins with simple path expressions in queries
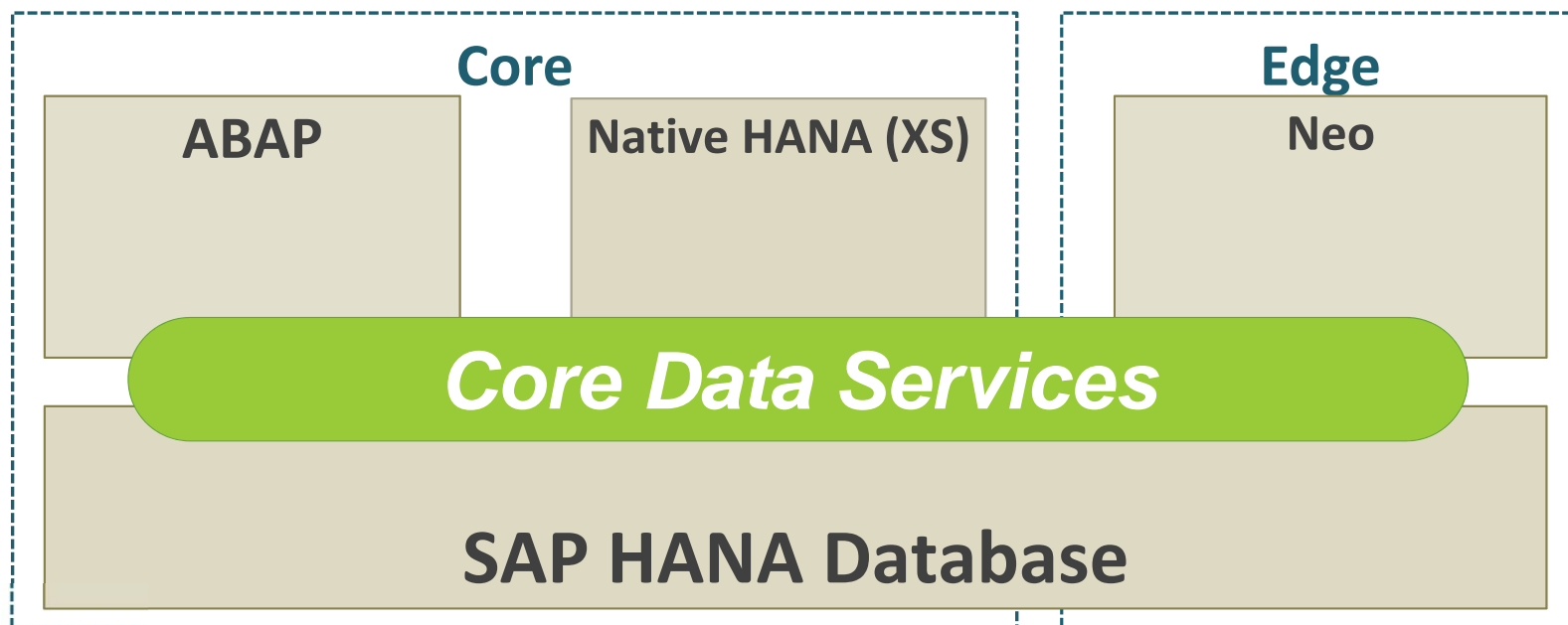
Expressions used for calculations and queries in the data model

Supported natively in both ABAP and HANA platforms

Pull data modeling as well as retrieval and processing of data to a higher semantic level (closer to the conceptual thinking of domain experts)
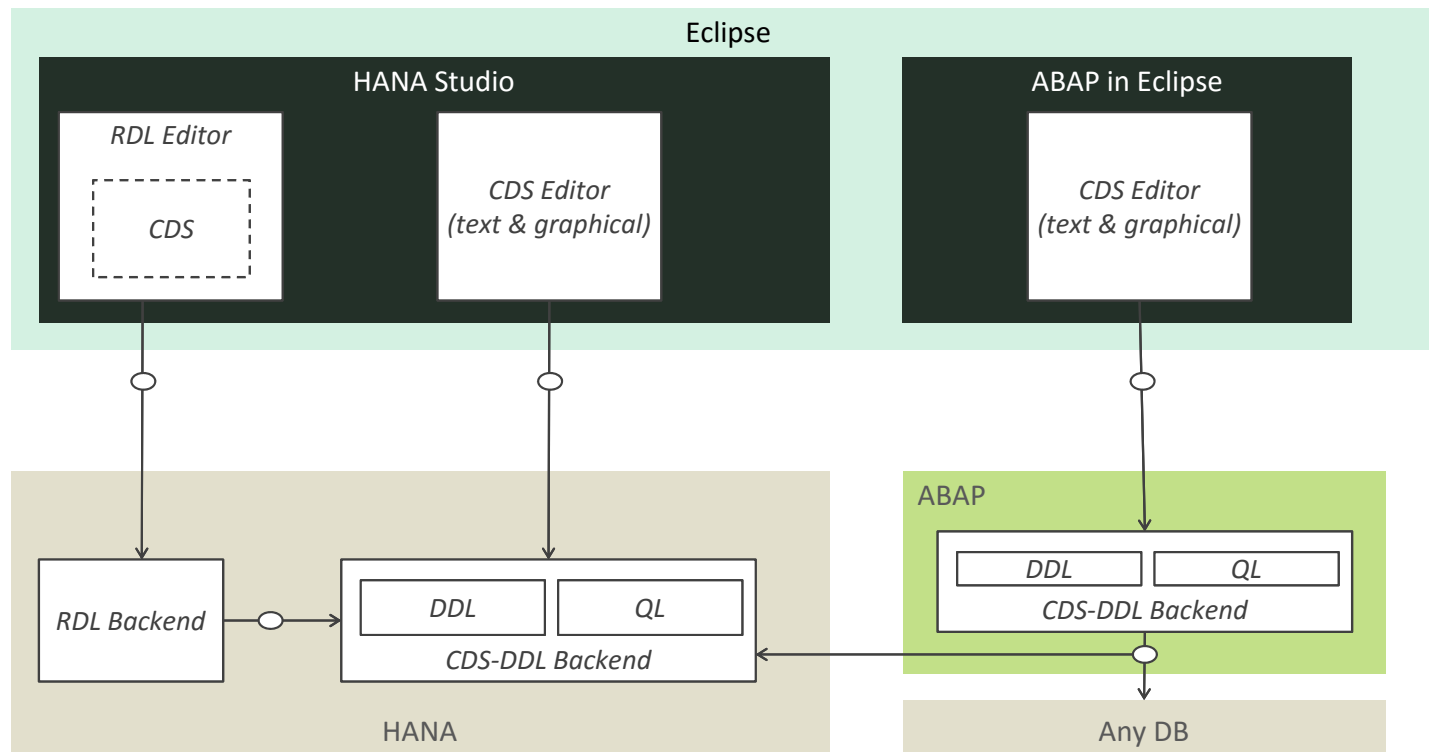
CDS as a Consistent SAP Platform

Core

ABAP	Native HANA (XS)

Edge

Neo

Core Data Services

SAP HANA Database

✳ *Ensure homogenity and interoperability*

A Developer's View of CDS

UM's Collaboration with SAP

SLCM SPECIFIC ENHANCEMENTS FOR HANA

Candidates for Enhancement – Function Modules

HRIQ_RFC_STUDENT_STUDIES_GET

HRIQ_RFC_STUDENT_MODREG_GET

HRIQ_STUDENT_ADMIS_READ_MULTI

HRIQ_STUDENT_REGIST_READ_MULTI

HRIQ_EXIST_OBJECT/RH_EXIST_OBJECT

PMIQ_BUPA_READ_CONTRACT_ACCT

HRIQ_CMACBPST_SELECT_WITH_STID

HRIQ_STUDENTS_ATTENDANCES_GET

BAPI_STUDENT_ADDRESS_GETDETAIL

BAPI_STUDENT_ADDRESSES_GET

BAPI_STUDENT_ADDINDCOM_GET

BAPI_STUDENT_GETDETAIL3

BAPI_STUDENT_GETDETAIL_PERIOD

HRIQ_MBSS_OFFER_AVAIL_GET

HRIQ_RFC_OFFERS_GET_LIST

HRIQ_MODUL_CREDITS_GET

HRIQ_PROGRAM_REGIST_GET

HRIQ_STUDY_PROGRAM_GET

HRIQ_GRAD_BY_PROGRAM_GET

HRIQ_MODULE_REGISTRATIONS_GET

HRIQ_AW_ACWORK_GET_RFC

HRIQ_MBSS_ST_BOOKED_QUERY

CL_HRPIQ00AW_ACADWORK_READ=>FILL_ALL_WORK_FOR_RFC

CL_HRPIQ00AW_ACADWORK_READ=>GET_PROG_WORK_FPR_RFC

CDS Views Created by UM

ZCD_BAS_1702 – Basic student data such as gender, nationality, marital status, etc. Data will be extracted from t502t, t005t, HRP1702, t005u, and dd07t

ZCD_BAS_1711 – Basic student residency data such as resident country, resident state, etc. Data will be extracted from hrp1711, t005f, t505v, t005t, and t005

ZCD_BAS_1896 – Basic student ethnicity data based on the student's race and ethnicity. Data will be extracted from hrp1896, t7piq_us_etht, hrp1704, and t7piqethnict

ZCD_BAS_1706 – Basic student fee category data. Data will be extracted from hrp1706 and t7piqstfeecatt

ZCD_BAS_1001 – Student's organization units based on student's program of study. Data will be extracted from hrp1001 and hrp1000

ZCD_BAS_CAMPUS – Student campus data based on the student's relationship to a particular location. Data will be extracted from HRP1001 and HRP1000.

CDS Views Created by UM (continued)

ZCD_ST_ADMISNS - Student admissions data

ZCM_ST_ADMPRG - Student admissions data along with data for the related program of study.

ZCD_ST_ATT - Student attributes from hrp9606 and zstudent_attrib.

ZCD_ST_BOOKINGS - Module booking information from HRP1001 and HRPAD506 for all booking records including SM's and CW's for a specific student.

ZCD_ST_COMMON –Basic student information such as name, date of birth, and confidentiality. Data will be extracted from HRP1000, HRP1701, HRP1702, and HRP1705.

ZCD_ST_CS_517 - Get students' study information from hrp1001 using relationship A517-Has Study.

ZCD_ST_PROGRAM - Incorporates hrp1001 relationships between ST, SC, CS, CG, O along with data on each.

ZCD_ST_PROGRESSN – Student progression results

CDS Views Created by UM (continued)

ZCD_ST_SE_CAMPUS - Get the relationship for location to event to hrpad506 to student and to module.

ZCD_ST_SPECS - Append data for specializations with ZCD_ST_PROGRAM and restricts to a keydate parameter.

ZCD_TIMELIMITS - The view will be used to replace HRIQ_ACAD_GET_PERIOD_DATES_NEW. It will get calendar timelimits based on org and output matches piqtimelimits structure.

ZCD_GRADE_CHG - Grade change information for all final appraisals based specifically on appraisal type, appraisal status and appraisal date.

ZCD_HOLD_STATUS - Students' holds and status information.

ZCD_INTERN_QUAL – Information about internal qualifications. Data will be extracted from HRP1000, HRP1708, and T7PIQQUAL_LEVEL.

SAP Deliverables

SLCM SPECIFIC ENHANCEMENTS FOR HANA

CDS Views Delivered by SAP

Admissions

Registration Data

Module Booking Data (with Module data)

Event Booking Information (Event and Event package data)

Specialization Information

Student Progression Data
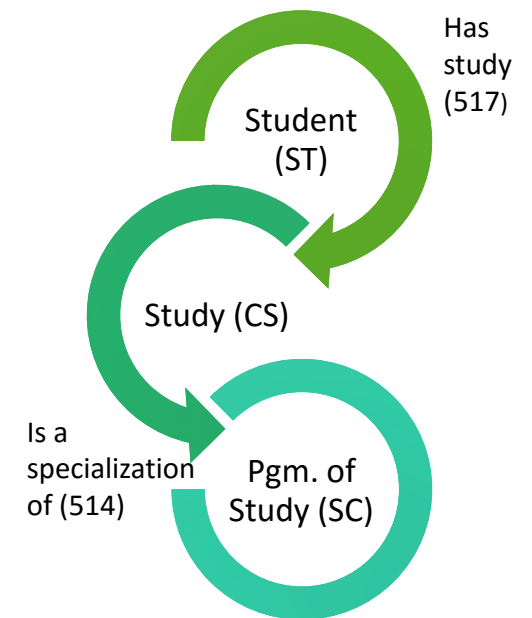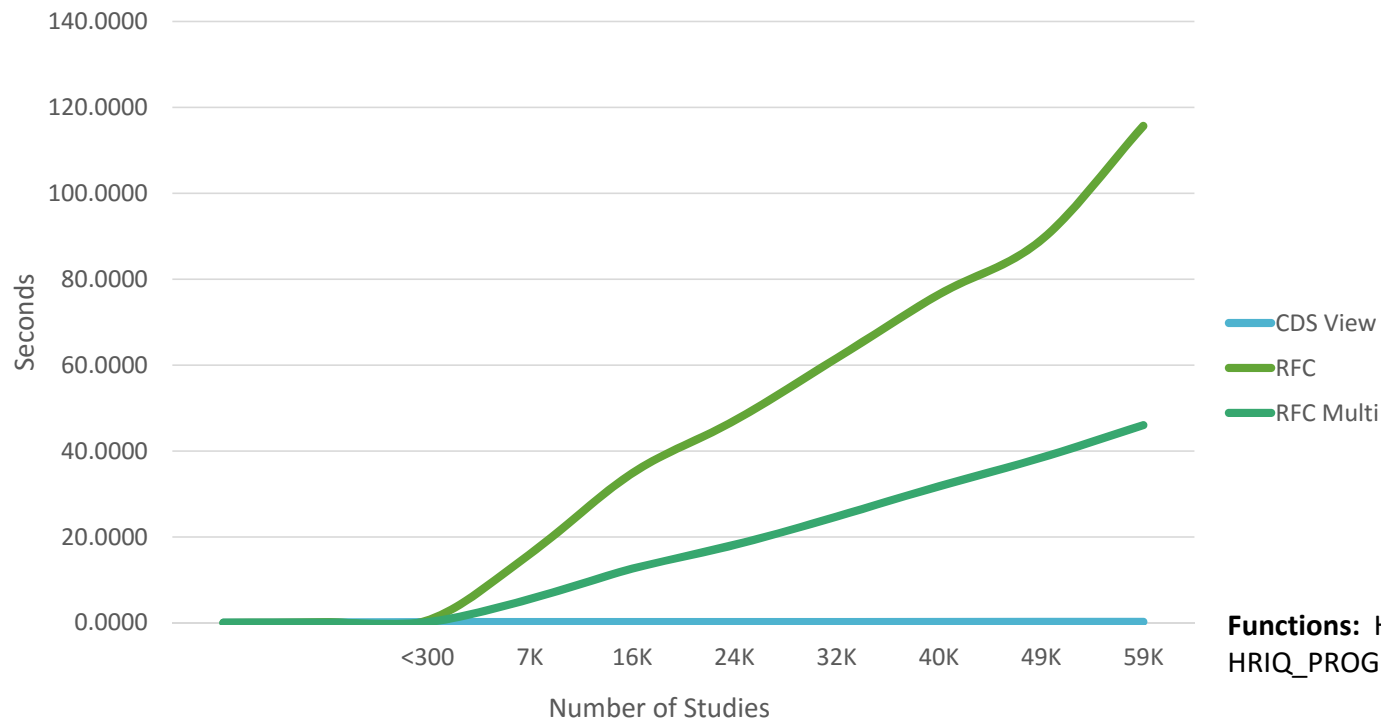
Student Hold/Status Information

Student Data

CDS Views Delivered by SAP (continued)

SAP Notes to be applied:
- 2272075 - Base / Text CDS views for SLCM module
- 2251457 - CDS views for SLCM module: Admission
- 2283242 - CDS views for SLCM module (note 3)

Note: CDS delivered as part of SAP ERP 6.0 EhP7 SP12, EhP8 SP02 and S/4 HANA 1605 releases

CDS Performance Metrics

Functions: HRIQ_STUDENT_STUDIES_GET and HRIQ_PROGRAM_DATA_GET

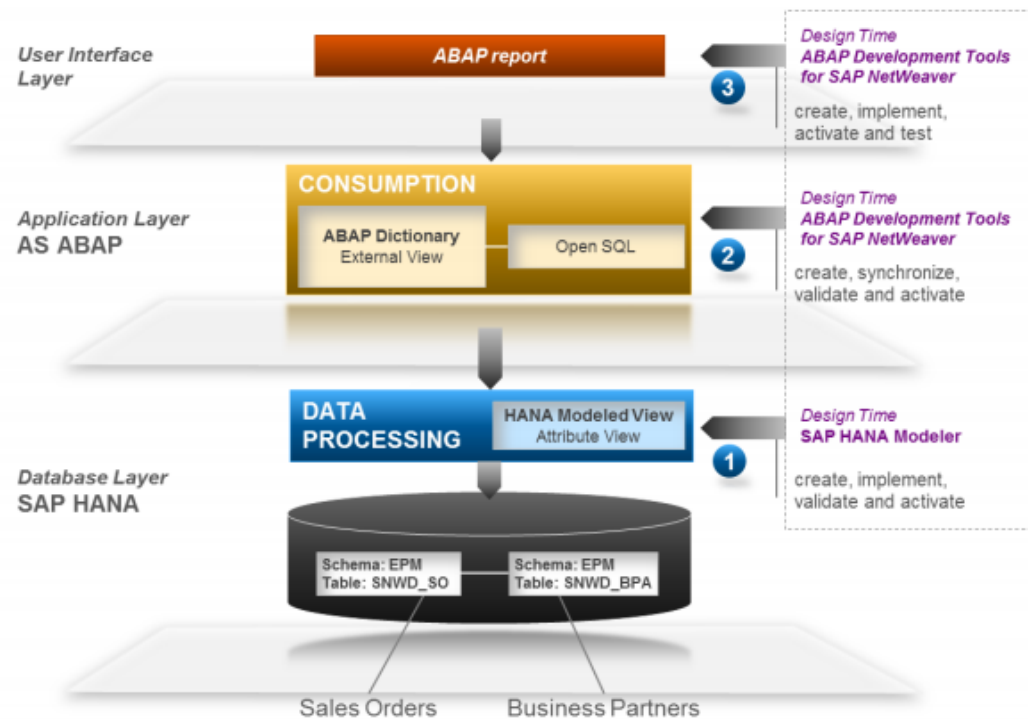CDS Views: PIQCDSSTDYPROG and PIQCDSCSSTREGN

Consuming CDS Views

Methods of Consumption

Methods employed by UM:

- Direct from ABAP
- ABAP Managed Database Procedures (AMDP)
- Business Server Pages (BSP)
- Tableau

Other available methods (from SAP):

- SAP Lumira
- SAP Analysis Path Framework (APF)

Consumption from ABAP

Consumption from ABAP (continued)

Ability to remove nested loops

Multi-record processing can be done without individual RFC calls

Easily merged with other datasets using standard Open SQL

```
select au~studentobjid, sp~studyobject, sp~programofstudyname into table @data(lt_result)
    from PIQCDSSTDYPROG( p_date = @sy-datum, p_lang = 'E' ) as sp
        inner join PIQCDSCSSTREGN( p_date = @sy-datum ) as ssr
            on sp~studyobject = ssr~studyobject
        inner join zit_active_users as au
            on au~studentnumber = ssr~studentnumber
    where
        (indxtab)
    .

get run time field t2.
t1 = t2 - t1.

select studentobjid into table @lt_stobjid from zit_active_users as au where (indxtab).
refresh lt_res.
loop at lt_stobjid assigning <stobjid>.
    refresh lt_sc.

    call function 'HRIQ_STUDENT_STUDIES_GET'
        exporting
            iv_plvar        = '01'
            iv_all_studies  = 'X'
            iv_objid        = <stobjid>
        importing
            et_studies      = lt_sc
        .

    loop at lt_sc assigning field-symbol(<sc>).
        clear ls_res.
        call function 'HRIQ_PROGRAM_DATA_GET'
            exporting
                imp_plvar       = '01'
                imp_objid       = <sc>-sc_objid
            importing
                exp_obj_stext   = ls_res-sc_stext
            .
        ls_res-sc_objid = <sc>-sc_objid.
        ls_res-st_objid = <stobjid>.

        if ls_res-sc_stext is not initial.
            append ls_res to lt_res.
        endif.
    endloop.
endloop.
```

ABAP Managed Database Procedure (AMDP)

Ability to write database specific procedures directly in ABAP

Allows code-push down to the database layer for performance intensive calculations

Database procedures are executed in ABAP environment using ABAP methods and database

Direct joins against internal table without need to manually create temporary tables

Multiple table returns possible so can easily replace previously used functions

```
1  CLASS ZCL_DEMO_AMDP DEFINITION PUBLIC.
2
3    PUBLIC SECTION.
4      INTERFACES if_amdp_marker_hdb .
5
6      TYPES: BEGIN OF ty_output,
7               company_name TYPE snwd_bpa-company_name,
8             END OF ty_output,
9             tt_output TYPE STANDARD TABLE OF ty_output.
10
11     METHODS my_method
12       IMPORTING
13         VALUE(iv_number) TYPE i
14       EXPORTING
15         VALUE(et_top)     TYPE tt_output .
16 ENDCLASS.
17
18 CLASS ZCL_DEMO_AMDP IMPLEMENTATION.
19
20   METHOD my_method BY DATABASE PROCEDURE FOR HDB
21                    LANGUAGE SQLSCRIPT OPTIONS READ-ONLY
22                    USING snwd_bpa.
23     --SQL Script coding
24     et_top = select top :iv_number company_name from snwd_bpa;
25   ENDMETHOD.
26 ENDCLASS.
```

Business Server Pages (BSP)

Student Activity Report

Business Server Pages (BSP) (continued)
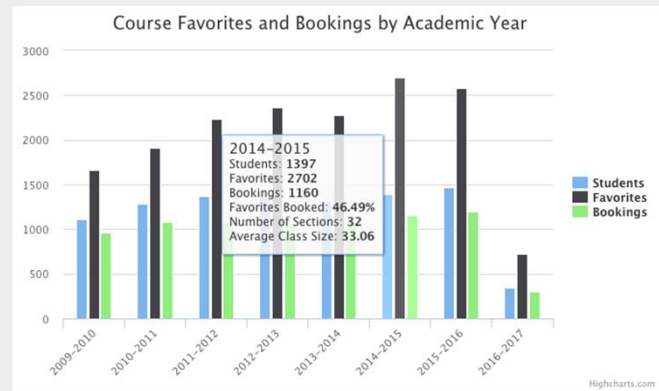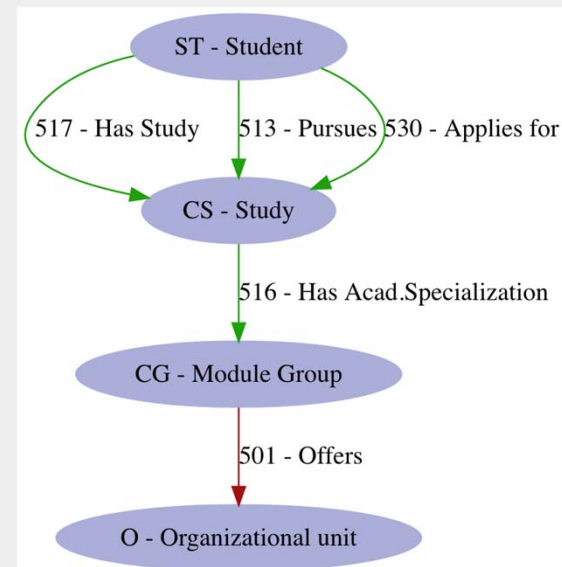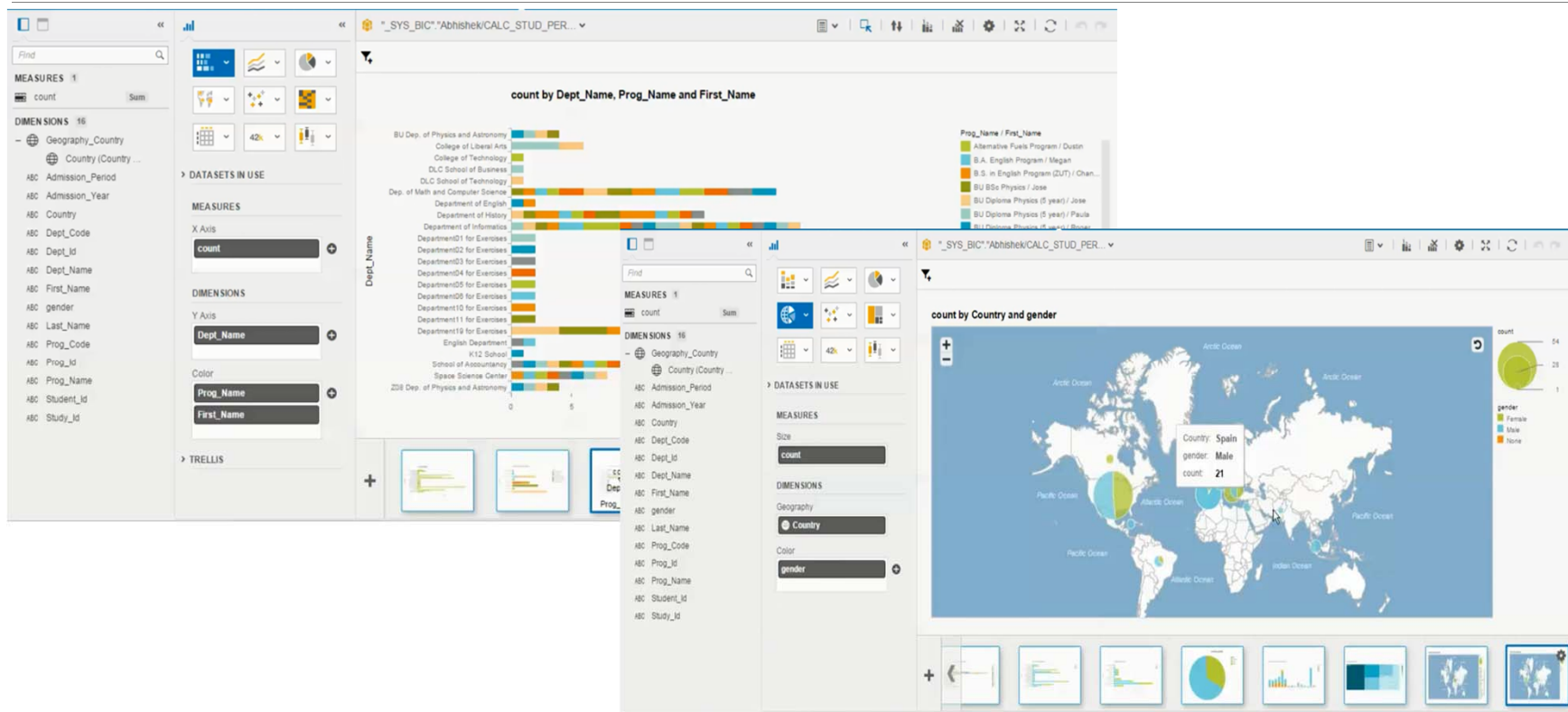
Tableau
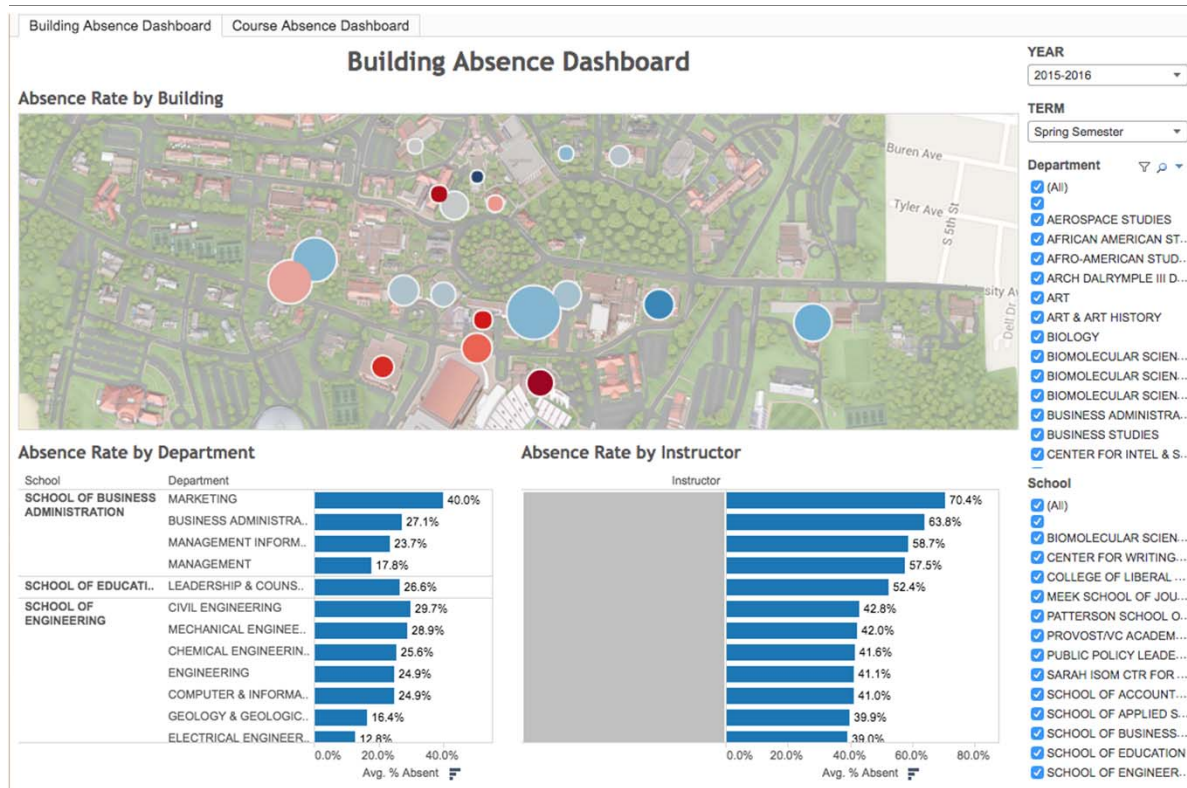
Analysis Path Framework (APF)
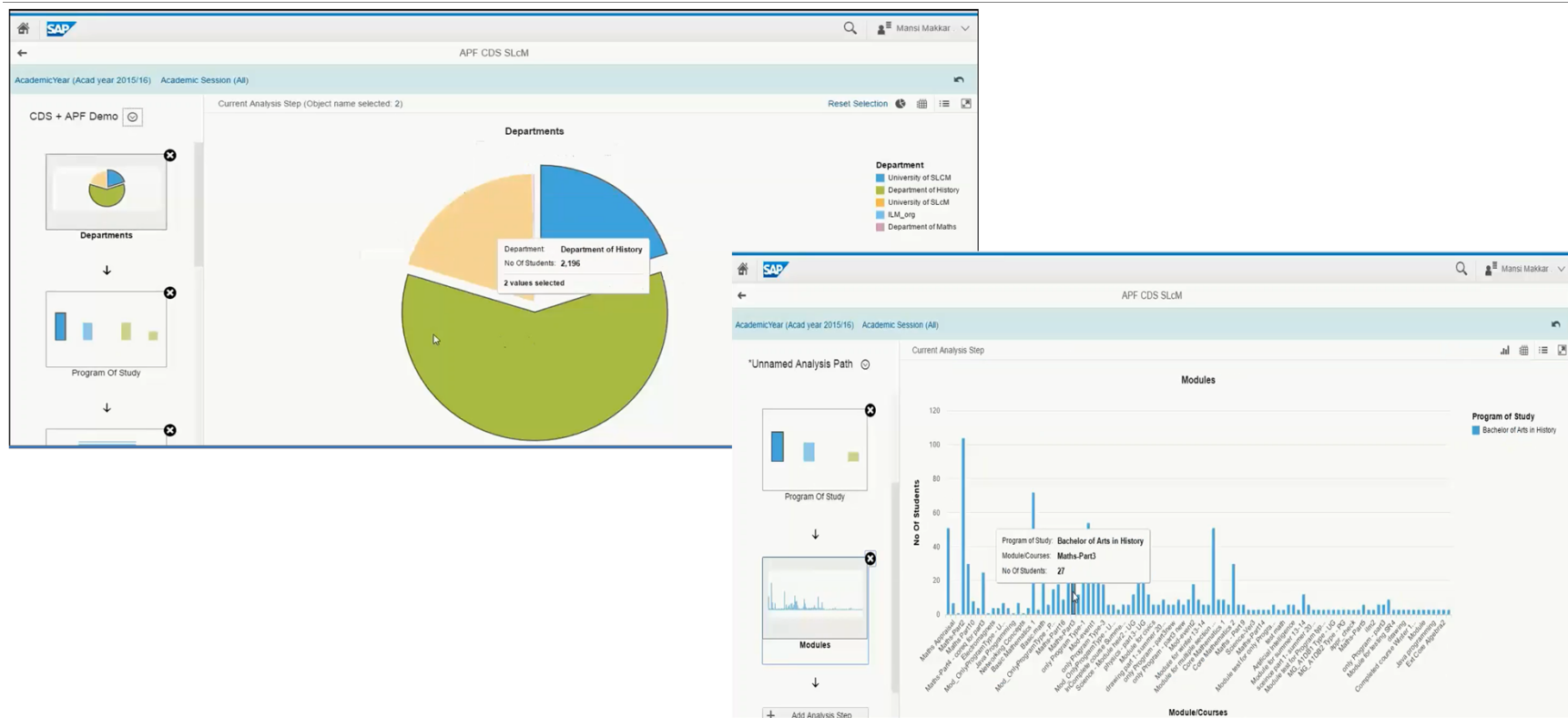
SAP Lumira

For More Information…

THE UNIVERSITY OF MISSISSIPPI   **SAP**

Margaret Walden
mfwalden@olemiss.edu

Farah Gabriela Gonzalez
farah.gabriela.gonzalez@sap.com

Chris Reichley
reichley@olemiss.edu

Anil Suresh Kumar
anil.suresh.kumar@sap.com