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

<table>
<thead>
<tr>
<th>Selection Method</th>
<th>Implementation Name</th>
<th>Selection Method Description</th>
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<tbody>
<tr>
<td>ZST4</td>
<td>ZSTUDENTSELMETHOD4</td>
<td>Admissions and/or Enrolled Status</td>
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<tr>
<td>ZCAW</td>
<td>ZSTUDENTSELMETHO34</td>
<td>Students with Change in Academic Work (grade, ED)</td>
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<tr>
<td>ZST3</td>
<td>ZSTUDENTSELMETHO36</td>
<td>By Classification</td>
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<tr>
<td>ZST1</td>
<td>ZSTUDENTSELMETHO1</td>
<td>By Admissions Data</td>
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<tr>
<td>ZST2</td>
<td>ZSTUDENTSELMETHO2</td>
<td>Selection by Orientation Session</td>
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<tr>
<td>ZST6</td>
<td>ZSTUDENTSELMETHO6</td>
<td>By registration and booking options</td>
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<tr>
<td>ZST8</td>
<td>ZSTUDENTSELMETHO8</td>
<td>Students by Status/Attribute</td>
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<tr>
<td>ZST14</td>
<td>ZSTUDENTSELMETHO14</td>
<td>Select students by campus</td>
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<tr>
<td>ZST18</td>
<td>ZSTUDENTSELMETHO18</td>
<td>Select Graduates</td>
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<tr>
<td>ZST19</td>
<td>ZSTUDENTSELMETHO19</td>
<td>Applied for graduation</td>
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<tr>
<td>ZST5</td>
<td>ZSTUDENTSELMETHO5</td>
<td>Prospect Characteristics</td>
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<tr>
<td>ZST11</td>
<td>ZSTUDENTSELMETHO11</td>
<td>By greek affiliation</td>
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<tr>
<td>ZST12</td>
<td>ZSTUDENTSELMETHO12</td>
<td>Select students by advisor</td>
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<tr>
<td>ZST13</td>
<td>ZSTUDENTSELMETHO13</td>
<td>By grade in course</td>
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<td>ZST15</td>
<td>ZSTUDENTSELMETHO15</td>
<td>By campus</td>
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<tr>
<td>ZST16</td>
<td>ZSTUDENTSELMETHO16</td>
<td>Veteran's Number and Status</td>
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<tr>
<td>ZST17</td>
<td>ZSTUDENTSELMETHO17</td>
<td>Admitted stud for webID letter</td>
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<tr>
<td>ZST20</td>
<td>ZSTUDENTSELMETHO20</td>
<td>Admitted students for Orientation letter</td>
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<tr>
<td>Function Module</td>
<td>Description</td>
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<tr>
<td>Z_STUDENT_FILL_DIG_CONTACTS</td>
<td>Get registration windows for this student</td>
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<tr>
<td>Z_STUDENT_FILL_HS_ORIENT</td>
<td>Get housing information for Orientation Session</td>
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<tr>
<td>Z_STUDENT_FILL_IMMUN</td>
<td>Get Student Immunization</td>
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<tr>
<td>Z_STUDENT_FILL_REQ_CATALOG</td>
<td>Get registration windows for this student</td>
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<tr>
<td>Z_STUDENT_FILL_ADDR</td>
<td>Get addresses for this student</td>
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<td>Z_STUDENT_FILL_ADM</td>
<td>Get admissions data for extracts</td>
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<tr>
<td>Z_STUDENT_FILL_ADVISOR</td>
<td>Get advisor data</td>
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<td>Z_STUDENT_FILL_ATTR</td>
<td>Get attributes for this student</td>
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<tr>
<td>Z_STUDENT_FILL_BASIC</td>
<td>Get student nationality, gender, marital status, residency, religion, ethnicity, campus, pernr, email information</td>
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<tr>
<td>Z_STUDENT_FILL_HOLDS</td>
<td>Get statuses and holds for this student</td>
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<tr>
<td>Z_STUDENT_FILL_MIN</td>
<td>Get minimal student information</td>
<td></td>
</tr>
<tr>
<td>Z_STUDENT_FILL_MIN2</td>
<td>Get name, gender, ssn, email, cell phone data for students</td>
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<tr>
<td>Z_STUDENT_FILL_NOTES</td>
<td>Get student notes for extracts</td>
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<tr>
<td>Z_STUDENT_FILL_ORIENTATION</td>
<td>Get orientation assignment</td>
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<tr>
<td>Z_STUDENT_FILL_ORIENTATION_EX1</td>
<td>Get summary data used by orientation advisor</td>
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<tr>
<td>Z_STUDENT_FILL_PROSPECT</td>
<td>Get prospect data for extracts</td>
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<tr>
<td>Z_STUDENT_FILL_BP</td>
<td>Get related persons for extracts</td>
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<td>Z_STUDENT_FILL_STUDY</td>
<td>Get studies information</td>
<td></td>
</tr>
<tr>
<td>Z_STUDENT_FILL_TEST_SCORES</td>
<td>Get test scores for extracts</td>
<td></td>
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<tr>
<td>Z_STUDENT_FILL_TRANSCRIPTS</td>
<td>Get transcripts for extracts</td>
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<tr>
<td>Z_STUDENT_FILL_WINDOWS</td>
<td>Get registration windows for this student</td>
<td></td>
</tr>
<tr>
<td>Z_STUDENT_FILL_ADADV</td>
<td>Get additional advisor info for students</td>
<td></td>
</tr>
<tr>
<td>Z_STUDENT_FILL_MISC</td>
<td>Get student greek, sports, religion, ethnicity information</td>
<td></td>
</tr>
<tr>
<td>Z_STUDENT_FILL_ADVISOR_MULTI</td>
<td>Get advisor data</td>
<td></td>
</tr>
<tr>
<td>Z_STUDENT_FILL_STUDY_BY_TERM</td>
<td>Get studies information by term</td>
<td></td>
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<tr>
<td>Z_STUDENT_FILL_WEBID</td>
<td>Get webid</td>
<td></td>
</tr>
<tr>
<td>Z_STUDENT_FILL_MIN3</td>
<td>Get minimal student information with email</td>
<td></td>
</tr>
</tbody>
</table>
CDS Views
What are CDS Views?

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 Data Services

Ensure homogenity and interoperability
A Developer’s View of CDS

Diagram:

- **Eclipse**
  - HANA Studio
    - RDL Editor
    - CDS Editor (text & graphical)
  - ABAP in Eclipse
    - CDS Editor (text & graphical)
- **HANA**
  - RDL Backend
    - DDL
    - QL
    - CDS-DDL Backend
- **ABAP**
  - DDL
  - QL
  - CDS-DDL Backend
  - Any DB
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
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: PIQCDSSSTDYPREG and PIQCDSCSSTREGN

Has study (517)

Student (ST)

Is a specialization of (514)

Study (CS)

Pgm. of Study (SC)
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
**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
# Business Server Pages (BSP)

## Student Activity Report

### Table of Students

<table>
<thead>
<tr>
<th>Number</th>
<th>First</th>
<th>Year</th>
<th>Term</th>
<th>Program</th>
<th>Classification</th>
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</thead>
<tbody>
<tr>
<td>10454125</td>
<td>Madeleine</td>
<td>2015-2016</td>
<td>Spring Semester</td>
<td>B.A. in International Studies</td>
<td>Senior</td>
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<tr>
<td>10484209</td>
<td>Kelsey</td>
<td>2015-2016</td>
<td>Spring Semester</td>
<td>B.S. in Integrated Marketing Communicat</td>
<td>Sophomore</td>
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<tr>
<td>10467758</td>
<td>Alexander</td>
<td>2015-2016</td>
<td>Spring Semester</td>
<td>B.A. in International Studies</td>
<td>Senior</td>
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<tr>
<td>10384097</td>
<td>Bruce</td>
<td>2015-2016</td>
<td>Spring Semester</td>
<td>B.A. in International Studies</td>
<td>Unclassified</td>
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<tr>
<td>10468221</td>
<td>Henry</td>
<td>2015-2016</td>
<td>Spring Semester</td>
<td>B.A. in International Studies</td>
<td>Senior</td>
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<tr>
<td>10290159</td>
<td>Emily</td>
<td>2015-2016</td>
<td>Spring Semester</td>
<td>B.A. in International Studies</td>
<td>Senior</td>
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<td>10459554</td>
<td>Savannah</td>
<td>2015-2016</td>
<td>Spring Semester</td>
<td>B.A. in International Studies</td>
<td>Junior</td>
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<tr>
<td>10375484</td>
<td>Harriet</td>
<td>2015-2016</td>
<td>Spring Semester</td>
<td>B.A. in International Studies</td>
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</tbody>
</table>
Business Server Pages (BSP) (continued)

Course Favorites and Bookings

Select a term and course to create a chart showing course popularity.

<table>
<thead>
<tr>
<th>Term</th>
<th>Fall Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course</td>
<td>Bisc 103</td>
</tr>
</tbody>
</table>

BISC 103 (FALL SEMESTER)

- Students - the number of unique students who have added this course to their favorites.
- Favorites - the number of times the course has been added to students' favorites lists.
- Bookings - the number of actual bookings for the course.

Course Favorites and Bookings by Academic Year

Objects and Relationships Graph

- ST - Student
- CS - Study
- CG - Module Group
- O - Organizational unit

517 - Has Study -> 513 - Pursues
530 - Applies for

516 - Has Acad.Specialization

501 - Offers
Tableau
Analysis Path Framework (APF)
SAP Lumira
For More Information...

<table>
<thead>
<tr>
<th>THE UNIVERSITY OF MISSISSIPPI</th>
<th>SAP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Margaret Walden</td>
<td>Farah Gabriela Gonzalez</td>
</tr>
<tr>
<td><a href="mailto:mfwalden@olemiss.edu">mfwalden@olemiss.edu</a></td>
<td><a href="mailto:farah.gabriela.gonzalez@sap.com">farah.gabriela.gonzalez@sap.com</a></td>
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<td></td>
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</tr>
<tr>
<td>Chris Reichley</td>
<td>Anil Suresh Kumar</td>
</tr>
<tr>
<td><a href="mailto:reichley@olemiss.edu">reichley@olemiss.edu</a></td>
<td><a href="mailto:anil.suresh.kumar@sap.com">anil.suresh.kumar@sap.com</a></td>
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