Cindy Berg
Senior Manager

cindy.berg@rsmus.com
563 888 4419

Cindy has specialized in serving higher education institutions audit and consulting needs for 19 years. She is also RSM’s student financial aid expert.
Your speakers

Mike D’Agostino
Manager
mike.d’agostino@rsmus.com
816 751 4055

Mike specializes in Business Intelligence, Data Warehousing, and Database Administration. He has participated in the architecture and development of many custom data warehousing and business analytic solutions.
Why is everyone talking about data analytics?

- Optimize resources
- Faster better decision-making
- Cost reductions
- New opportunities
Business Intelligence vs. Data Warehousing vs. Decision Support vs…

**RSM BI:**
Business intelligence is about empowering organizations to truly leverage their data as an organizational asset to foster innovation, drive organizational excellence and create competitive advantage.
Making Sense of it all

The below terms are often used interchangeably

- Business Intelligence
- Data Analytics
- Decision Support
- Data Warehousing
- Big Data
The Challenge – Typical Situation

In addition, many do not have the ability to effectively and efficiently transform their raw data into actionable information.

Issues:
- Conflicting answers to the same question
- Different definitions for the same data or calculation
- Timing differences
- Data quality
THE SOLUTION
Business Intelligence Approach

• Business intelligence best practices follow the “Data-In”, “Data-Out”, ”Data Managed” approach which provides the framework to turn an organization’s raw data into the actionable information
Business Intelligence Approach

Data strategy

Data architecture
- Cloud BI
- Mobile BI
- BI Dashboards
- BI Portals
- SharePoint Integration

Big data & Internet of Things

Exploratory analytics
Retrospective reporting & analysis

Near real-time analytics/alerting

Predictive analytics

Past Present Future

Data governance

Strategy and Data Management ("Data-Managed")
Proactively defining and managing as a strategic enterprise asset to foster innovation, drive organizational excellence and create competitive advantage

Reporting, Analytics, Information Delivery ("Data-Out")
The ability for end users to consume the integrated data in an efficient and effective manner

The Data Foundation ("Data-In")
The integration of data from multiple, disparate sources into a trusted, understandable form
Eastern Iowa Community College needed access to advanced analytics that focus on student and course information. Key performance indicators include:

- **Section analysis**
- **Student success**
- **Snapshot reporting**

**Notes**

- **Integration:**
  - Data refreshed on a nightly basis
  - Includes extensive logging and automatic notifications
- **Load Processing:**
  - Data stored in a database and excel files
  - Include “snapshots” of the data
- **Business Rule Application**
  - Remedial indicators
  - Enrolled in previous and next term indicators
Cohort design examples

Select Union Type

- One Set
- No Union
- Union
- Intersection
- Difference
- Union less Intersect

View Advanced Analytics

Group A

- Term Year
- Semester

Student Demographic Criteria

- Cohort
- Gender
- Race
- Age
- Limited English
- Student Zip Code
- Student County
- Student State
- Residency

Intersection

- Term Year
- Semester

Group B

- Term Year
- Semester

Student Enrollment Criteria

- Home Location
- Student Status
- Full/Part Time
- Orientation Flag
- First Term Enroll...
- Last Term Enroll...
- Program Cluster
- Program Code
- Program Descr..
- Earliest Registrar...
- Registration B...

129 Students meet the criteria.
Example 2

Higher Education organization needed a data foundation that integrated Finance/Budget, Payroll, HR and manually maintained data. Key performance indicators include:

- Budget to actual
- Payroll to position budget
- HR analysis

Notes

- Integration:
  - Loads data from a database, csv files and excel files
  - Integrates with SharePoint for manually maintained data entry

- Business Rule Application:
  - Data entry error reports

- Data De-Duplication:
  - 3 different ID for same person. School, State, Payroll

- Preventive Data Quality:
  - Business Data Quality: Identifies GL transactions that contain invalid combination of codes (Account, Department, Fund)
  - Technical Data Quality: Only load records with valid dates
Finance example

<table>
<thead>
<tr>
<th>FundSubDescription</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>$292,141,763</td>
<td></td>
</tr>
<tr>
<td>FEDERAL_RESTRICTED</td>
<td>$16,259,576</td>
</tr>
<tr>
<td>GENERAL_OPERATING</td>
<td>$244,795,677</td>
</tr>
<tr>
<td>GENERAL_RESTRICTED</td>
<td>$9,097,218</td>
</tr>
<tr>
<td>UNRESTRICTED_LOCAL</td>
<td>$8,645,449</td>
</tr>
<tr>
<td>Others</td>
<td>$13,341,841</td>
</tr>
</tbody>
</table>

©2015 RSM US LLP. All Rights Reserved.
## Guided analytics examples

<table>
<thead>
<tr>
<th>Transaction Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
</tr>
<tr>
<td>25,000</td>
</tr>
<tr>
<td>50,000</td>
</tr>
<tr>
<td>75,000</td>
</tr>
<tr>
<td>100,000</td>
</tr>
<tr>
<td>125,000</td>
</tr>
<tr>
<td>150,000</td>
</tr>
<tr>
<td>175,000</td>
</tr>
<tr>
<td>200,000</td>
</tr>
<tr>
<td>225,000</td>
</tr>
<tr>
<td>250,000</td>
</tr>
</tbody>
</table>

### "Unallowable" transactions in last 0 days

<table>
<thead>
<tr>
<th>Type</th>
<th>Fund</th>
<th>Campus Code</th>
<th>Department</th>
<th>Department Code</th>
<th>Date</th>
<th>Line Description</th>
<th>Account Number</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>General ledger</td>
<td>10300</td>
<td>01</td>
<td>REVEG SUMM.</td>
<td>100800</td>
<td>2009-09-02 AMEX</td>
<td>$34,668</td>
<td>11000</td>
<td>5420</td>
</tr>
<tr>
<td>General ledger</td>
<td>10300</td>
<td>01</td>
<td>REVEG SUMM.</td>
<td>100800</td>
<td>2009-09-02 AMEX</td>
<td>$40510</td>
<td>40151</td>
<td>46873</td>
</tr>
<tr>
<td>General ledger</td>
<td>10300</td>
<td>01</td>
<td>REVEG SUMM.</td>
<td>100800</td>
<td>2009-09-02 AMEX</td>
<td>$40151</td>
<td>40151</td>
<td>46873</td>
</tr>
<tr>
<td>General ledger</td>
<td>10300</td>
<td>01</td>
<td>REVEG SUMM.</td>
<td>100800</td>
<td>2009-09-02 STU P</td>
<td>$46673</td>
<td>40151</td>
<td>95526</td>
</tr>
<tr>
<td>General ledger</td>
<td>10300</td>
<td>01</td>
<td>REVEG SUMM.</td>
<td>100800</td>
<td>2009-09-02 STU P</td>
<td>$46673</td>
<td>40151</td>
<td>95526</td>
</tr>
<tr>
<td>General ledger</td>
<td>10300</td>
<td>01</td>
<td>REVEG SUMM.</td>
<td>100800</td>
<td>2009-09-02 STU P</td>
<td>$46673</td>
<td>40151</td>
<td>95526</td>
</tr>
<tr>
<td>General ledger</td>
<td>10300</td>
<td>01</td>
<td>REVEG SUMM.</td>
<td>100800</td>
<td>2009-09-02 STU P</td>
<td>$46673</td>
<td>40151</td>
<td>95526</td>
</tr>
<tr>
<td>General ledger</td>
<td>10300</td>
<td>01</td>
<td>OTHER SOURCES</td>
<td>101350</td>
<td>2009-09-02 LIBRARY FINES</td>
<td>$536</td>
<td>40757</td>
<td>536</td>
</tr>
<tr>
<td>General ledger</td>
<td>10300</td>
<td>01</td>
<td>OTHER SOURCES</td>
<td>101350</td>
<td>2009-09-02 LIBRARY FINES</td>
<td>$536</td>
<td>40757</td>
<td>536</td>
</tr>
<tr>
<td>General ledger</td>
<td>20301</td>
<td>01</td>
<td>CMMC CYBERSEC</td>
<td>210025</td>
<td>2009-09-02 Cash Distribution</td>
<td>$5482</td>
<td>11000</td>
<td>5482</td>
</tr>
<tr>
<td>General ledger</td>
<td>20301</td>
<td>01</td>
<td>CMMC CYBERSEC</td>
<td>210025</td>
<td>2009-09-02 CHARLES OBrien</td>
<td>$4264</td>
<td>61264</td>
<td>4264</td>
</tr>
<tr>
<td>General ledger</td>
<td>40378</td>
<td>01</td>
<td>PREPAID REV CARD</td>
<td>400330</td>
<td>2009-09-02 13884 CSV T DEP</td>
<td>$1,124</td>
<td>40921</td>
<td>1,124</td>
</tr>
<tr>
<td>General ledger</td>
<td>40378</td>
<td>01</td>
<td>PREPAID REV CARD</td>
<td>400330</td>
<td>2009-09-02 13884 CSV T DEP</td>
<td>$1,124</td>
<td>40921</td>
<td>1,124</td>
</tr>
<tr>
<td>General ledger</td>
<td>40378</td>
<td>01</td>
<td>PREPAID REV CARD</td>
<td>400330</td>
<td>2009-09-02 13885 TURBO DEP</td>
<td>$1,124</td>
<td>40921</td>
<td>1,124</td>
</tr>
<tr>
<td>General ledger</td>
<td>40378</td>
<td>01</td>
<td>PREPAID REV CARD</td>
<td>400330</td>
<td>2009-09-02 13885 TURBO DEP</td>
<td>$1,124</td>
<td>40921</td>
<td>1,124</td>
</tr>
<tr>
<td>General ledger</td>
<td>40378</td>
<td>01</td>
<td>PREPAID REV CARD</td>
<td>400330</td>
<td>2009-09-02 13887 CSV T DEP</td>
<td>$1,124</td>
<td>40921</td>
<td>1,124</td>
</tr>
<tr>
<td>General ledger</td>
<td>40378</td>
<td>01</td>
<td>PREPAID REV CARD</td>
<td>400330</td>
<td>2009-09-02 13887 CSV T DEP</td>
<td>$1,124</td>
<td>40921</td>
<td>1,124</td>
</tr>
<tr>
<td>General ledger</td>
<td>40378</td>
<td>01</td>
<td>PREPAID REV CARD</td>
<td>400330</td>
<td>2009-09-02 CC TURBO DEP</td>
<td>$1,124</td>
<td>40921</td>
<td>1,124</td>
</tr>
<tr>
<td>General ledger</td>
<td>40378</td>
<td>01</td>
<td>PREPAID REV CARD</td>
<td>400330</td>
<td>2009-09-02 CC TURBO DEP</td>
<td>$1,124</td>
<td>40921</td>
<td>1,124</td>
</tr>
<tr>
<td>General ledger</td>
<td>10300</td>
<td>02</td>
<td>REVEG SUMM.</td>
<td>100800</td>
<td>2009-09-02 STU P</td>
<td>$23,994</td>
<td>11000</td>
<td>23994</td>
</tr>
<tr>
<td>General ledger</td>
<td>10300</td>
<td>02</td>
<td>REVEG SUMM.</td>
<td>100800</td>
<td>2009-09-02 STU P</td>
<td>$23,994</td>
<td>11000</td>
<td>23994</td>
</tr>
<tr>
<td>General ledger</td>
<td>40378</td>
<td>02</td>
<td>PREPAID REV CARD</td>
<td>400330</td>
<td>2009-09-02 295 295 turbo deposit</td>
<td>$43</td>
<td>40151</td>
<td>295</td>
</tr>
<tr>
<td>General ledger</td>
<td>40378</td>
<td>03</td>
<td>PREPAID REV CARD</td>
<td>400330</td>
<td>2009-09-02 295 295 turbo deposit</td>
<td>$43</td>
<td>40151</td>
<td>295</td>
</tr>
<tr>
<td>General ledger</td>
<td>40378</td>
<td>02</td>
<td>PREPAID REV CARD</td>
<td>400330</td>
<td>2009-09-02 cc turbo deposit</td>
<td>$101</td>
<td>40151</td>
<td>101</td>
</tr>
<tr>
<td>General ledger</td>
<td>40378</td>
<td>03</td>
<td>PREPAID REV CARD</td>
<td>400330</td>
<td>2009-09-02 cc turbo deposit</td>
<td>$101</td>
<td>40151</td>
<td>101</td>
</tr>
<tr>
<td>General ledger</td>
<td>10300</td>
<td>03</td>
<td>REVEG SUMM.</td>
<td>100800</td>
<td>2009-09-02 Stu P</td>
<td>$13,438</td>
<td>11000</td>
<td>13438</td>
</tr>
<tr>
<td>General ledger</td>
<td>10300</td>
<td>03</td>
<td>REVEG SUMM.</td>
<td>100800</td>
<td>2009-09-02 Stu P</td>
<td>$13,438</td>
<td>11000</td>
<td>13438</td>
</tr>
<tr>
<td>General ledger</td>
<td>40378</td>
<td>03</td>
<td>PREPAID REV CARD</td>
<td>400330</td>
<td>2009-09-02 Stu P</td>
<td>$13,438</td>
<td>11000</td>
<td>13438</td>
</tr>
<tr>
<td>General ledger</td>
<td>40378</td>
<td>03</td>
<td>PREPAID REV CARD</td>
<td>400330</td>
<td>2009-09-02 Stu P</td>
<td>$13,438</td>
<td>11000</td>
<td>13438</td>
</tr>
<tr>
<td>General ledger</td>
<td>40378</td>
<td>03</td>
<td>PREPAID REV CARD</td>
<td>400330</td>
<td>2009-09-02 Stu P</td>
<td>$13,438</td>
<td>11000</td>
<td>13438</td>
</tr>
<tr>
<td>General ledger</td>
<td>40378</td>
<td>03</td>
<td>PREPAID REV CARD</td>
<td>400330</td>
<td>2009-09-02 Stu P</td>
<td>$13,438</td>
<td>11000</td>
<td>13438</td>
</tr>
</tbody>
</table>
How to begin

Project management
- Plan
- Requirements
- Analyze
- Design
- Build
- Test
- Deploy

Strategy and data management

Reporting, analytics and information delivery

Data foundation

Vision and business goals

Maintain and improve

Documentation and Deliverables:
- Business goals and objectives
- Requirements
- Data model
- Source-to-Target mapping
- Analytic wireframes
- Testing framework
QUESTIONS AND ANSWERS?