More Advanced Webi Techniques from the Jedi Academy

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SESSION CODE: 0904
Agenda

- Introduction
- Query Techniques
- Report Techniques
- Performance Considerations
- Conclusion
Introduction

Alan Mayer

- Co-founded Integra Solutions in 1993
  - Used BusinessObjects since 1992
  - Wrote the first BusinessObjects training manuals
  - Over 75 Fortune 1000 customers before company was sold in 2007
- Presented at every national conference
- Founded Solid Ground Technologies in 2009
  - Different company – same principles
  - Specializing in BusinessObjects consulting and training
The Perfect Storm

Java
Major Release
Calculation Changes

Stability Issues
Messaging
Jedi Knights Arise!
Where we left off …

- ASUG 2013
  - Advanced Web Intelligence Techniques For Aspiring Jedi Knights
    - Combined queries
    - Multi-SELECTs
    - Row and time restrictions
    - Naming conventions
    - Layered variables
    - Dynamic sorting and breaking
Agenda

- Introduction
- **Query Techniques**
- Report Techniques
- Performance Considerations
- Conclusion
Several topics to discuss:

- Software-driven sets
- Free hand SQL
- Personalized list of values
- Query on query workarounds
- Editor comparisons
Combining Queries

- Can combine two or more queries using SET operators
  - UNION, INTERSECT, MINUS
The Combination Effect

- Queries are combined **VERTICALLY** in one table
  - Use Merged Dimension report technique to combine horizontally
  - Result depends on set operator used

```
Query 1

UNION

Query 2
```

All the rules for set operators were given in last year’s presentation:

Advanced Webi Intelligence Techniques for Aspiring Jedi Knights (ASUG 2013)
Set Technique 1

- This works against databases that don’t support all set operators
  - MS Access allows UNION but not INTERSECT or MINUS

One possibility is NOT IN. There is no such thing as a minus query in MS Access.

```sql
select h.* from hello h
WHERE uniqueid NOT IN
(select uniqueid from hello1 h1)
```
Set Technique 2

- Set operators can be indented to allow even more flexibility

Find those customers that have stayed at a resort **BUT NOT EVERY YEAR**

Customer Baker
Loyal since 2004
Sets Demonstration
Free Hand SQL

- This is a **VERY** controversial topic
  - Many hot opinions
  - I stand on the “gotta have it” side
  - Apparently SAP now agrees (SAPPHIRE 2014)
    - Current Webi version does not allow this “out of the box”
    - This is a future enhancement – no ETA
Using Free Hand SQL

- Can you add free hand SQL to Webi reports today?
  - Yes – if you’re given permissions to change the SQL behind a Webi report
  - Not the best alternative but a functioning workaround
Free Hand SQL Workaround

- Add the same number of objects that your custom SQL statement will return to a query
  - Data type is IMPORTANT
  - A string-based object must be used to cover a string result from SQL
No Cheating Allowed!

What happens if you get too creative

- Web Intelligence
  - The data type of a column in the query is not valid. (IES 10811)
  - The query SQL has 3 instead of 2 columns. (IES 10810)
Free Hand SQL Demonstration
List of Values Limitations

- List of values are assigned per data provider
  - They also cannot be personalized
    - My products
    - My regions

- Some customers created applications to store personalized values
  - Values stored by user in a separate table
  - Subquery added as a condition object to retrieve these values when needed
Using Excel to Store Values

- BI 4.x allows Excel spreadsheets to be accessed as a data source
  - Only works using the Java applet (BI 4.x: RIA)
  - Values can be added per user locally
  - Spreadsheet can be uploaded to BI Enterprise
  - A query can now retrieve those values inside Webi
  - Use query on query technique to retrieve Excel values to complete a condition
  - Your own personal LOV!
Personal LOV Demonstration
Query on Query (QoQ)

- Using one query to complete another is powerful
  - Just used it to create a personalized List of Values

- It does have one huge drawback
  - Webi places the values from the source query in a list
  - Databases have limits on how large this list can be
  - Default limit of 1000 values
QoQ Technique 1: Legacy Subquery

- A subquery could retrieve an unlimited number of values
  - Have to use the same universe
  - Could not source values from a second universe
QoQ Technique 2: Multiple Conditions

- Use more than one condition combined using OR
  - This is how a list is processed by a database
    - Value1 or Value2 or …
  - Must limit the source queries to 1000 objects or less
  - Works but cumbersome
QoQ Technique 3: Federated Subquery

- Use a query from a federated universe (.unx)
  - Data foundation could be built using multiple connections
    - Connection 1 used for all other objects
    - Connection 2 used by the subquery
  - Only works in BI 4.x

There IS a way to get this to work in BO 3.1 depending on the database involved.

For example, Oracle allows database links that point to other schemas/tables. Condition objects could be created against those tables.
Browser Editors

- Webi documents can be created/modified using three editors in BI 4.x:
  - Webi Rich Client (desktop application)
  - HTML (browser)
  - Rich Internet Application or RIA (Java applet in browser)

- Unfortunately, one is not a superset of the others
  - Meaning – not all features can be found in one editor
  - This is not good news for users
  - HTML is the stated direction but this will take a while to realize
  - No Jedi magic can fix this, but knowledge of the deltas can help
Several good sources for discovering what each editor can do:

- Gregory Botticchio gave a good feature comparison on SAP Community Network (SCN)
  - [http://tinyurl.com/na9zkk6](http://tinyurl.com/na9zkk6)
- Newer Web Intelligence User Guides now include the same feature comparison (since BI 4.1 SP03)
  - [http://tinyurl.com/qa77sry](http://tinyurl.com/qa77sry) pp 14 - 16
Here’s my short list of the biggest exclusive features:

<table>
<thead>
<tr>
<th>HTML Editor</th>
<th>Java RIA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Only creates queries from universe</td>
<td>Conditional formatting (alerters)</td>
</tr>
<tr>
<td>Prompt input side panel</td>
<td>Change data source of query</td>
</tr>
<tr>
<td>Create open document links with Wizard</td>
<td>Custom number formatting</td>
</tr>
<tr>
<td></td>
<td>Data mode</td>
</tr>
<tr>
<td></td>
<td>Query database ranking</td>
</tr>
<tr>
<td></td>
<td>Subqueries</td>
</tr>
<tr>
<td></td>
<td>Create queries from Excel, Bex, Analysis view</td>
</tr>
</tbody>
</table>
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- **Report Techniques**
- Performance Considerations
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Reporting Techniques

- The plot thickens …
  - Calculation engine changes
  - Comparison testing
The Consequences of Migrating

- Migrating from BusinessObjects 3.1 to BI 4.1 causes enough angst …
  - Dated utilities for repository validation (reposcan)
  - Extended downtimes due to migration tools (UMT)
  - Limited lifecycle tools (Promotion Management)

- … without this occurring:

<table>
<thead>
<tr>
<th>Customer</th>
<th>Number of guests</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baker</td>
<td>73</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Customer</th>
<th>Number of guests</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baker</td>
<td>86</td>
</tr>
</tbody>
</table>
Ok, the last example was a bit extreme but very real

- The calculation engine behind Web Intelligence reports has been changing/evolving
- Some of these changes correct past behavior which was incorrect
- Other changes affect variables and formulas that worked correctly in past versions
- The latter is harder to accept
A Visual Analogy

- Legacy variables and formulas
A Visual Analogy

- In the future ... context matters!
Documentation?

- These calculation engine changes are not included in reference manuals
- To help, Gregory Botticchio has documented the most important changes on SCN:
  - [http://scn.sap.com/docs/DOC-39973](http://scn.sap.com/docs/DOC-39973)
The Upshot for You

- If you aren’t comparing new to old reports …
  - … your life as a BI analyst will suffer

- Carly Thomas gives a good list of items to check on SCN:
  - http://tinyurl.com/lq5g7vw

- If you upgraded to BI 4.0 / 4.1 without this step, start now!
Current and Future Steps

- SAP is providing tools that will rewrite certain formulas for you.
- There may be tools provided in the future:
  - Comparison of native Webi reports
  - No ETA
- Third party vendors can help you isolate the changes from a metadata level:
  - Sherlock
  - Infolytik
Comparisons on Your Own

- Other software vendors offer comparison tools at reasonable prices
  - These tools help you compare other forms of Webi output (Excel, PDF)
  - Especially handy for comparing scheduled or publication results

- What follows are just a few examples…
Comparing Excel Output

- Florencesoft’s **diffEngineX** allows you to compare workbooks side by side

This tool is not free but offers reasonable license fees (even time-limited).

Other good alternatives include Synkronizer.
**Comparing PDF Output**

- **diffPDF** does a good job of checking PDF copies for any discrepancy.

Great for noticing pagination problems (both vertically and horizontally). Does a pixel by pixel comparison.
Calculation Engine Demo
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Query Stripping

- Technique which rewrites the query based on the objects used in the report
  - BI 4.1 .unx universes only
  - Must be turned on in universe

- Formerly available only for OLAP data sources

- If used correctly, could accelerate query performance
  - Removes unnecessary columns, tables, joins
Corrupted Variables

- Variable and formulas can become corrupted
  - Usually happens when data source is deleted

- Reports with corrupted variables can take much longer to render in BI 4.1

- Find and eliminate these corrupted items whenever found
  - Third-party metadata solutions previously mentioned can help

![Formula](image)
Indexed Queries

- Base conditions on objects that are indexed
- Universe developers can help
  - Use prefix or suffix to point these objects out
  - Create condition objects that are indexed
Report Reduction

- Eliminate any needless structure or formatting
- Common bad examples:
  - Aligning tables vertically to provide complex headers, footers
  - Repeating formulas
  - Keeping report variables that are no longer used
Monitoring

- Webi Rich Client can provide many real-time metrics
  - Has a built-in debug mode
  - **ALT-SHIFT** while cursor in the bottom left-hand corner
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Key Learnings

- Many advanced techniques were covered at the Academy today
  - Software-driven sets
  - Personalized LOVs
  - Free Hand SQL
  - Query on Query alternatives
  - Report calculation engine changes
  - Report comparison strategies
  - Performance strategies

- Hungry for more?
  - Turn in a review – Session 0904
  - And use your new-found powers for good!
Please provide feedback on this session by completing a short survey via the event mobile application.

SESSION CODE: 0904

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