



More Advanced Webi Techniques from the Jedi Academy

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Solid Ground Technologies

SESSION CODE: 0904

Agenda

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



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Introduction

Alan Mayer

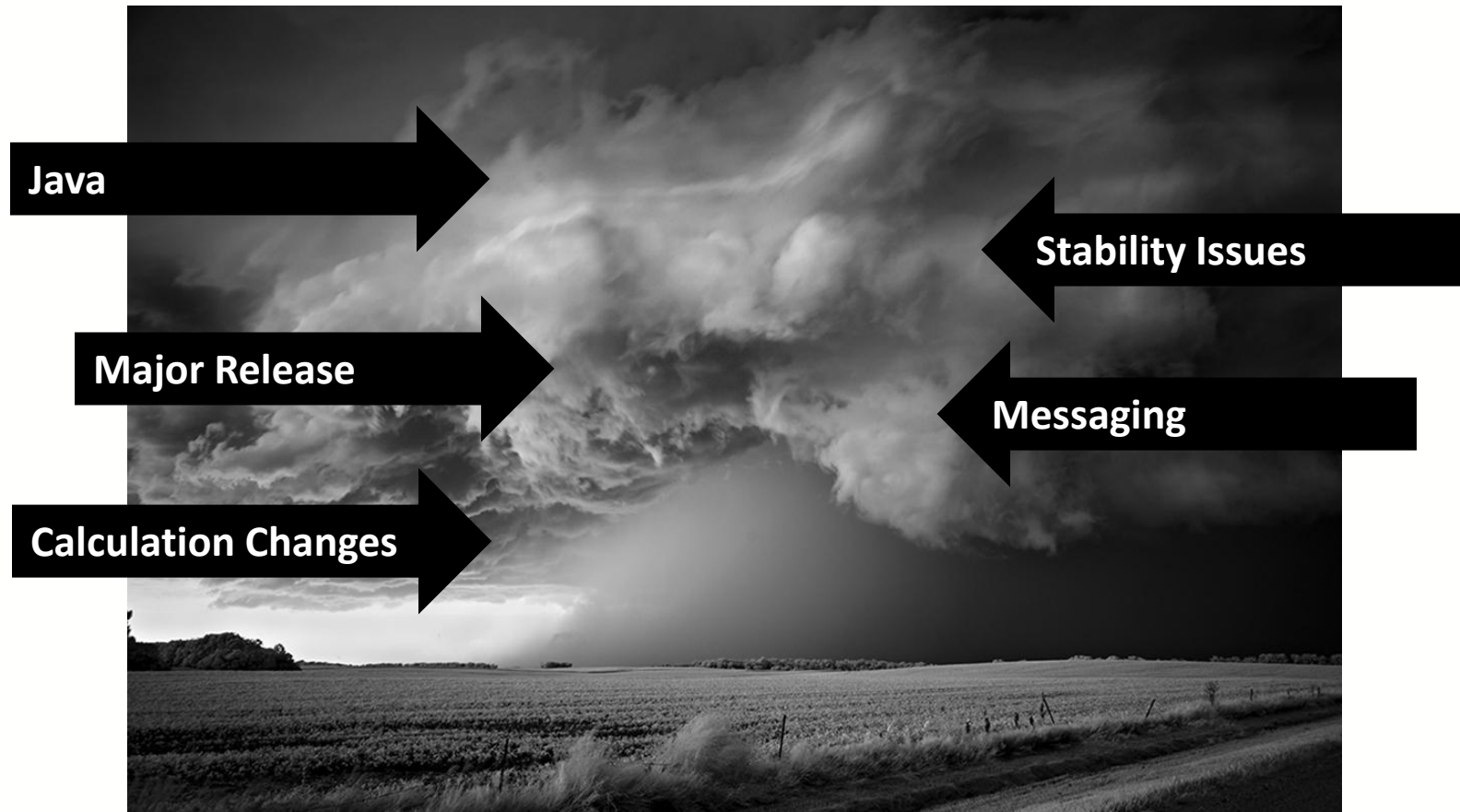
- Co-founded Integra Solutions in 1993
 - Used BusinessObjects since 1992
 - Wrote the first BusinessObjects training manuals
 - Over 75 Fortune 1000 customers before company was sold in 2007
- Presented at every national conference
- Founded Solid Ground Technologies in 2009
 - Different company – same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



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The Perfect Storm



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Jedi Knights Arise!



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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



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Query Techniques (QT)

- Several topics to discuss:
 - Software-driven sets
 - Free hand SQL
 - Personalized list of values
 - Query on query workarounds
 - Editor comparisons

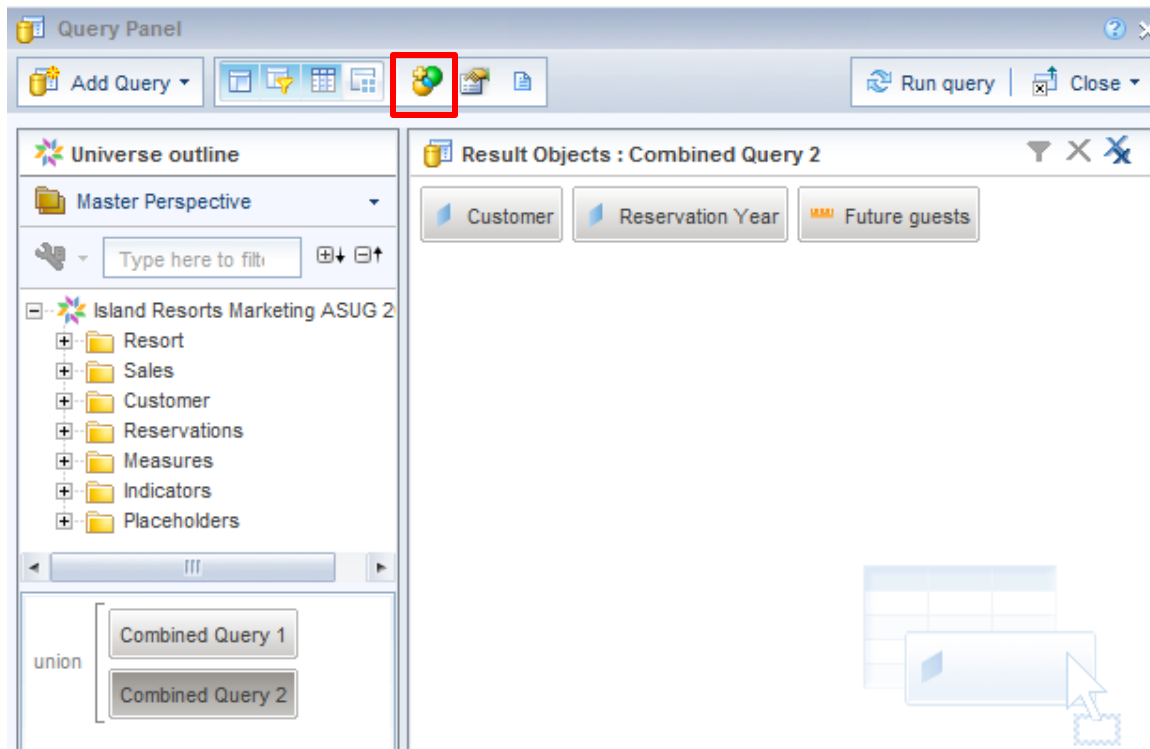


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Combining Queries

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

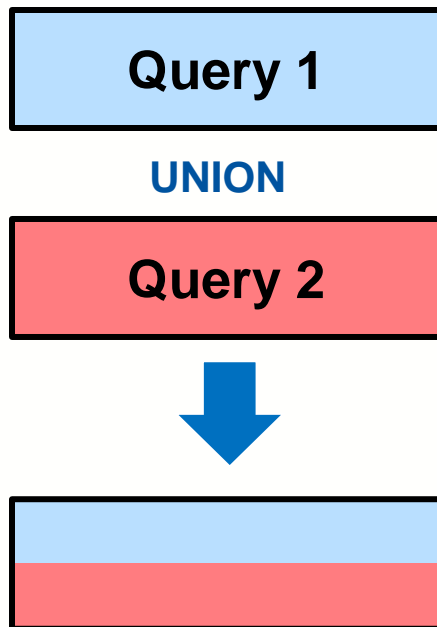


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The Combination Effect

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



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

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



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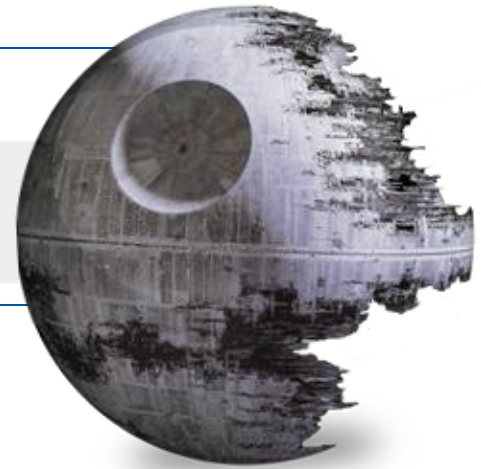
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Set Technique 1

- 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.

```
select h.* from hello h
WHERE uniqueid NOT IN
(select uniqueid from hello1 h1)
```

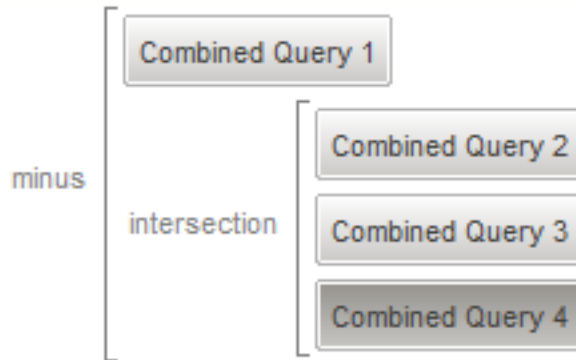


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Set Technique 2

- 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



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Sets Demonstration



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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



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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

Query Script viewer

View or edit the query script

☐ Use the query script generated by your query

☒ Use custom query script

```
SELECT
  Resort_Country.country,
  Resort.resort
FROM
  Country Resort_Country,
  Resort
WHERE
  ( Resort_Country.country_id=Resort.country_id )
```

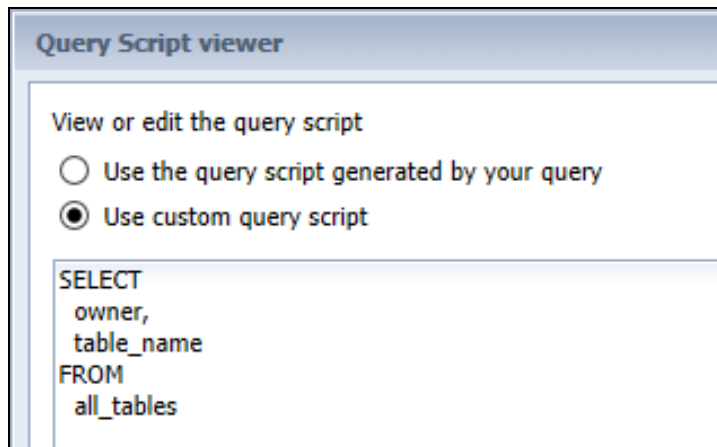


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Free Hand SQL Workaround

- 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



The screenshot shows a dialog box titled "Query Script viewer". It contains two radio buttons under the heading "View or edit the query script". The first radio button is labeled "Use the query script generated by your query" and is unselected. The second radio button is labeled "Use custom query script" and is selected. Below the radio buttons, there is a text area containing the following SQL query:

```
SELECT
  owner,
  table_name
FROM
  all_tables
```

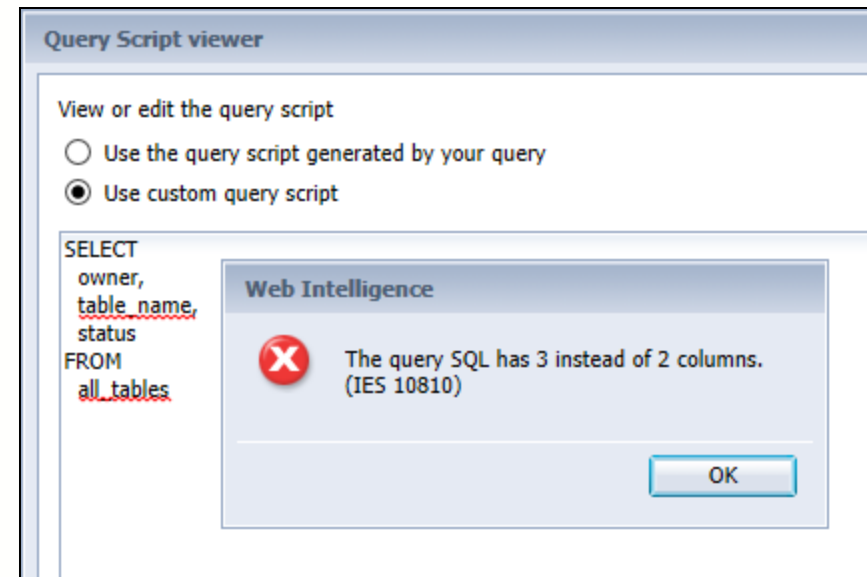
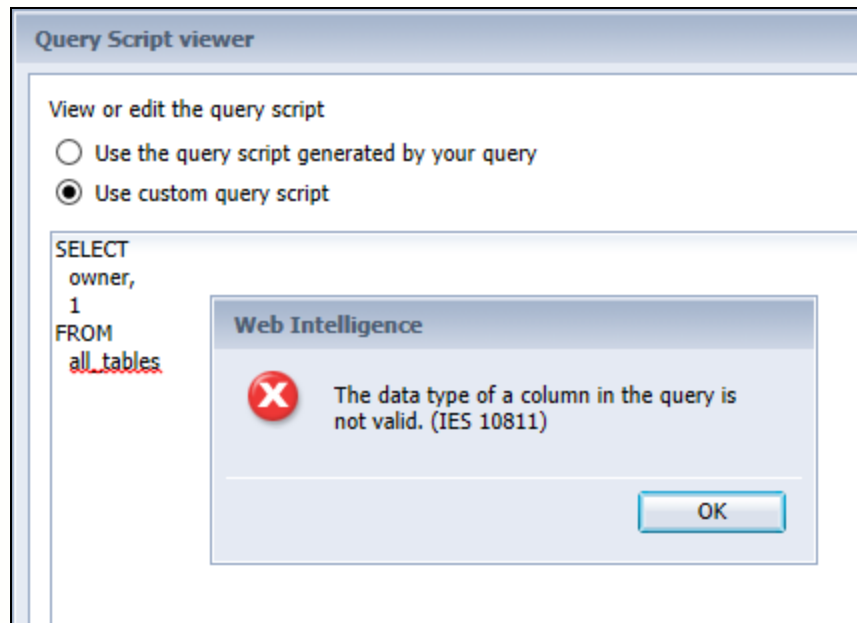


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No Cheating Allowed!

- What happens if you get too creative



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Free Hand SQL Demonstration



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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



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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!



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Personal LOV Demonstration



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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



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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

The screenshot displays a query builder interface with two main sections: 'Result Objects' and 'Query Filters'.

Result Objects: This section contains four buttons labeled 'Country of origin', 'Region', 'City', and 'Customer'.

Query Filters: This section is divided into two parts by an 'And' connector. The top part contains a filter for 'Year 2006' and a subquery filter for 'Customer' with the operator 'In list'. The bottom part contains a filter for 'Year 2005' and a filter for 'Revenue' with the operator 'Greater than' and a value of '50000'.



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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

The screenshot displays a software interface with two main sections. The top section, titled 'Result Objects', contains four buttons: 'Country of origin', 'Region', 'City', and 'Revenue'. The bottom section, titled 'Query Filters', is divided by an 'Or' operator. It contains three filter rows, each with a 'Customer' field set to 'In list' and a text input field containing a list of names: 'ker;Brendt;Diemers', 'oldschmidt;Hopkins', and 'Jones;Kamata;Kami'. Each text input field has a small menu icon to its right.



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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.



Query on Query Demonstration



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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



Editor Deltas

- 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>
 - Newer Web Intelligence User Guides now include the same feature comparison (since BI 4.1 SP03)
 - <http://tinyurl.com/qa77sry> pp 14 - 16



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Biggest Editor Differences

- Here's my short list of the biggest **exclusive** features:

HTML Editor	Java RIA
Only creates queries from universe	Conditional formatting (alerters)
Prompt input side panel	Change data source of query
Create open document links with Wizard	Custom number formatting
	Data mode
	Query database ranking
	Subqueries
	Create queries from Excel, Bex, Analysis view



Editor Demonstration



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Reporting Techniques

- The plot thickens ...
 - Calculation engine changes
 - Comparison testing



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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:

Customer	Number of guests
Baker	73



Customer	Number of guests
Baker	86



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Calculation Engine Changes

- 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



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A Visual Analogy

- Legacy variables and formulas



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A Visual Analogy

- In the future ... **context** matters!



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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>



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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!***



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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



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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...



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Comparing Excel Output

- Florescesoft's **diffEngineX** allows you to compare workbooks side by side

The screenshot displays the diffEngineX application. At the top, two Excel spreadsheets are compared side-by-side. The 'original1' spreadsheet has columns: Name, Address, Start Date. The 'modified1' spreadsheet has columns: Name, Address, Email, Start Date. Below these, a 'Worksheet Comparison (Formulae)' window shows the results of the comparison. It states: 'Generated: 16 September 2009 23:34:23 by Florescesoft DiffEngineX' and 'Number of cell differences: 14'. A table below lists the differences, with columns for Range, Cell contents on Sheet #1, and Cell contents on Sheet #2.

Range	Cell contents on Sheet #1	Cell contents on Sheet #2
\$C\$1		Email
\$B\$2	4 Univ Way	22 Pine Street
\$C\$2		charlie@local
\$A\$3		Jane
\$B\$3		3 E. Madison
\$C\$3		jane@acme
\$D\$3		29/05/2005 00:00
\$B\$4	10 Pike Str	10 Pyke Street
\$C\$4		john@loop
\$C\$5		paul@root
\$D\$5	24/11/2003 00:00	
\$A\$6	Bob	
\$B\$6	4 Broadway	
\$D\$6	08/10/1996 00:00	

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

Other good alternatives include Synkronizer

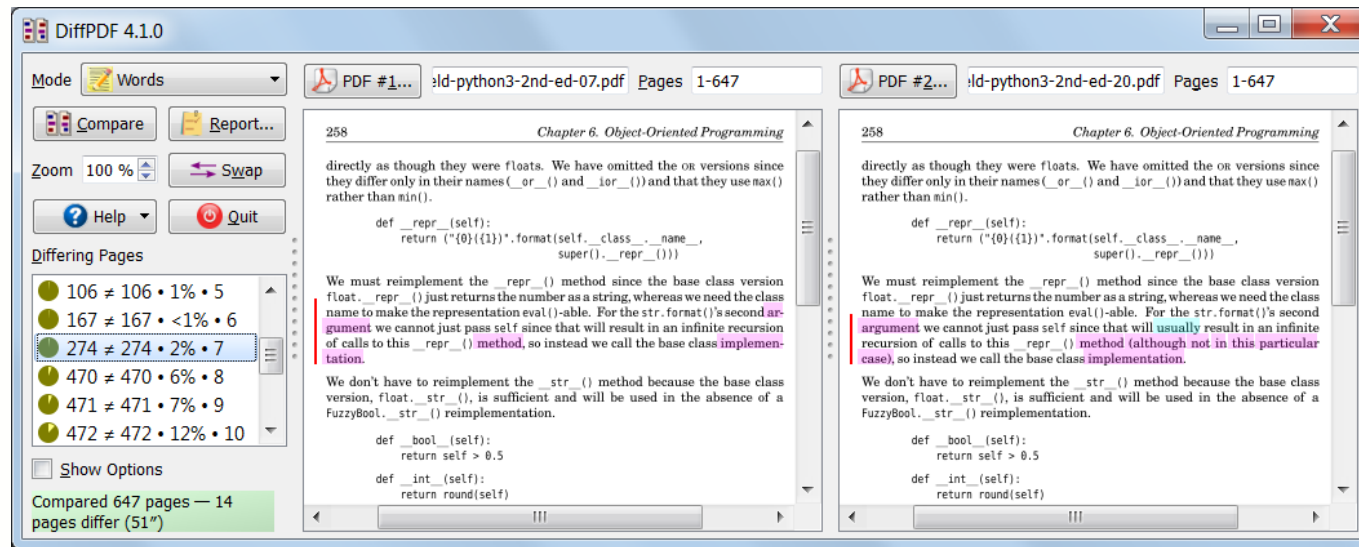


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Comparing PDFOutput

- **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



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Calculation Engine Demo

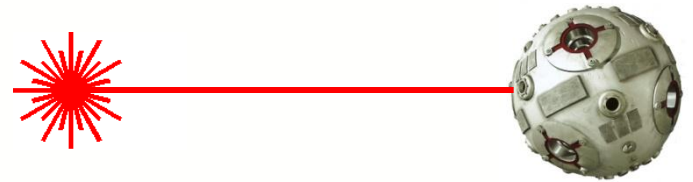


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Query Stripping

- 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



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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
<code>=[[DP1.DO23]]</code>



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



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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



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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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Performance Demo



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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!



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Session 0904

More Advanced Techniques from the Jedi Academy

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