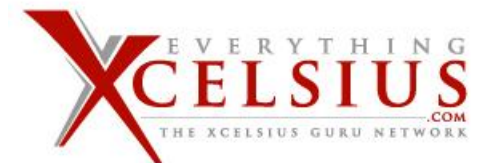


Xcelsius Gurus

Leveraging BI Web Services for better dashboards

Presented by: David Lai

Date: September 27, 2011



Who are We?

❖ Xcelsius Gurus Network

- #1 source for Xcelsius community related information
- <http://www.everythingxcelsius.com>

❖ David Lai

- SAP Business Objects Consultant
- Co-author of SAP BusinessObjects Dashboards 4.0 Cookbook
- Author of web blog <http://www.davidlai101.com/blog> and coauthor of <http://www.myxcelsius.com>



Agenda

- Quick overview of Query as a Web Service and Live Office
- BI Web Services combining the best of both worlds
- But wait, there's more to BI Services!
- BI Web Service limitations and workarounds
- Useful resources
- Question and Answer period (But feel free to ask questions any time!)



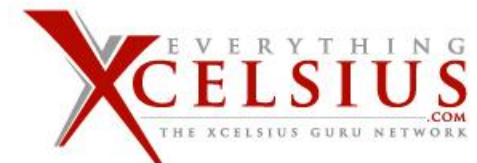
Query as a Web Service - Pros

Performance

- Query as a Web Service does not have to build a WEBI report inside Xcelsius and queries directly to the database
- Good for large data sets that need to be broken down with prompt parameters

Data Logic / Maintainability

- Keeps Data Logic in the data layer so that database handles all the number crunching through the ETL



Query as a Web Service - Cons

Complexity

- Cannot create complex data structures such as crosstabs
- Cannot perform any complex calculations or aggregations
- Will need to contact ETL developer whenever a data structure request is needed. Since this happens often during development, it will impact development time significantly.



Live Office - Pros

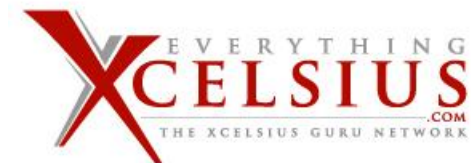
Data Complexity

- Crosstabs with a dynamic amount of columns or formulas in the cells that require complex formulas can be done in the WEBI report.

# of sales made per year	Sales Office 1	Sales Office 2	Sales Office 3	Sales Office 4	Sales Office 5	Sales Office 6	Sales Office 7
2001	64	52	66	78	76	33	14	
2002	63	71	87	1	11	61	40	
2003	22	31	22	8	15	72	10	

Scheduling

- We can make use of WEBI report scheduling on queries that take long to execute



Live Office - Cons

Setup and Maintenance

- Setup is more complicated. Must first bind Live Office object on the Excel spreadsheet. Then you'll need to setup the Data Manager portion.
- When WEBI data structure has changed, you will need to delete the Live Office object and do the re-binding and re-adding on the Data Manager again. Often leads to referencing problems

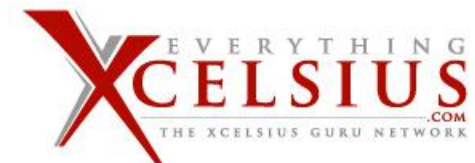
The diagram illustrates a problem with Live Office when the data structure changes. On the left, a spreadsheet shows a formula in cell B1: `=SUM(E2:E13)`. The formula is highlighted with a red box, and the result in cell B2 is 28291388.8. On the right, after a data structure change, the formula in cell B1 is `=SUM(E14:E25)`, also highlighted with a red box. The result in cell B2 is 0, and a yellow warning icon is visible in cell A2. A large arrow points from the left spreadsheet to the right one, indicating the transition.

	A	B	C	D	E
1	sum of products	28291388.8		Lines	Sales revenue
2				Accessories	7368323.4
3				City Skirts	299000.8

	A	B	C	D	E
1	sum of products	0		Lines	Sales revenue
2				Accessories	7368323.4
3				City Skirts	299000.8

Performance

- When running queries, Live Office is significantly worse than QaaWS, the physical WEBI Report needs to be built in Excel first. (Extra Step)
- Scheduled WEBIs are limited to small data sets



BI Web Services

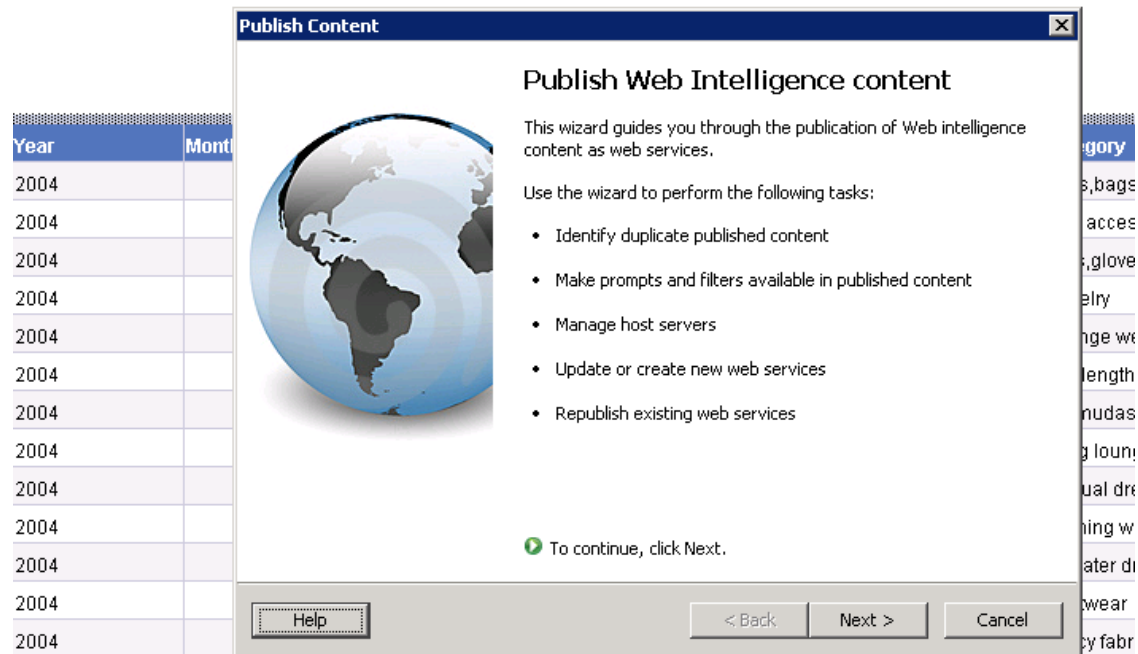


- Available on SAP BusinessObjects XI 3.1 SP2
- Allows you to create callable Web Services from WEBI reports
- Any application can consume data from BI Web Services
- In BOBJ XI 3.1 you need to use WEBI Rich Client to create BI Web Services. In BI4 you can create them from Infoview
- BI Web Service Objects are managed as QaaWS objects



Benefits of BI Web Services

- Easy to setup. Create your WEBI report, then publish your desired data block




- Combines strengths from QaaWS and Live Office when building dashboards



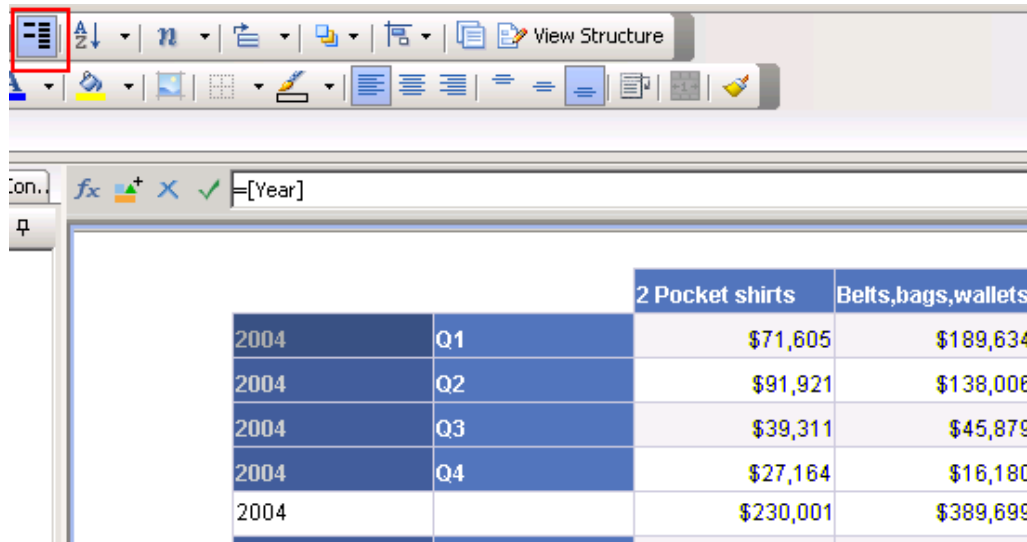
Benefits of BI Web Services - Cont

- Create complex data structures. Leverage the power of crosstabs, special aggregations, advanced contexts, and advanced calculations.

fx =Max([Sales revenue] In ([Year];[Quarter])) In ([Year])



Year	Yearly Sales Revenue	Max Quarterly Revenue
2004	\$8,096,124	\$2,660,700
2005	\$13,232,246	\$4,186,120
2006	\$15,059,143	\$4,006,718

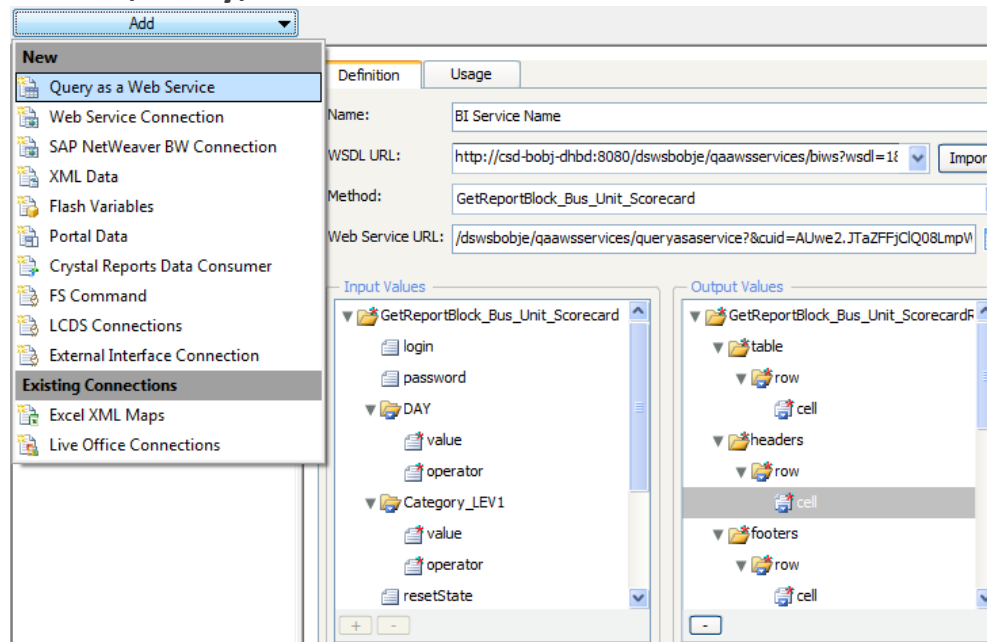


con. fx =[Year]

		2 Pocket shirts	Belts,bags,wallets
2004	Q1	\$71,605	\$189,634
2004	Q2	\$91,921	\$138,006
2004	Q3	\$39,311	\$45,879
2004	Q4	\$27,164	\$16,180
2004		\$230,001	\$389,699

Benefits of BI Web Services - Cont

- Setup your data bindings in Xcelsius like QaaWS. Only difference is that the output contains header, body, footer.



- Schedule WEBI Reports so that users don't have to query the database
- Improved performance due to the fact the WEBI does not have to physically be built in Excel anymore.
- Lower development time and cost from fewer ETL requests



But wait there's more!

Filters

- Recall that with Live Office, we could only schedule small datasets. Datasets over 500 rows affects dashboard performance.
- However BI Web Services has the ability to use the WEBI filtering mechanism on scheduled reports, thus passing Xcelsius a small data set.
- Tested with data sets that are 20k+ rows and performance is great.

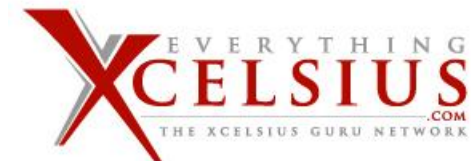
Report Filters Applied to: Block1

Year In list: 2004
Month In list: 1
City In list: Austin
Category In list: 2 Pocket shirts; Jewelry

Dataset with 7 dimensions will be very large. In our case we have over 10000 rows which is too large to go into Xcelsius.

Using the filters, our dataset becomes 2 rows and performance using filters is instantaneous

Year	Month	State	City	Store name	Lines	Category	Sales revenue
2004		1 Texas	Austin	e-Fashion Austin	Accessories	Jewelry	\$14,903
2004		1 Texas	Austin	e-Fashion Austin	Shirt Waist	2 Pocket shirts	\$383



Filters Cont

- To setup the filters that you want to use on your dashboard, just check your desired filter dimensions, variables, and measures when publishing your WEBI block.

Publish Content

Define published content

Enter a name and description for the published content, and make filters available.

Block1

In this example we are allowing users to filter from all the available dimensions

Set filters...

Manage servers...

< Back Next > Cancel

Set Filters

Select content to publish

Available filters:

		Name
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Year
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Month
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	State
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	City
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Store name
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Lines
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Category
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sales revenue

OK Cancel

Drilldown Capability

- The ability to drill up and down hierarchies is a common requirement

Year	Sales revenue
2004	\$8,096,124
2005	\$13,232,246
2006	\$15,059,143

Quarter	Sales revenue
Q1	\$2,660,700
Q2	\$2,279,003
Q3	\$1,367,841
Q4	\$1,788,580

- Before BI Web Services, the ability to create drilldowns without the help of 3rd party tools was very difficult.
- BI Web Services leverages the WEBI engine to perform drilldowns.

Drilldown Capability - Cont

- Whenever you create a BI Web Service, there are 2 methods. One for drilling down and one for retrieving data normally

The screenshot displays a software interface for configuring a BI Web Service. On the left, a tree view shows a 'Connection 1' with three methods: 'Query as a Web Service', 'drill down', and 'drill up'. The 'drill down' method is selected. The main panel shows the 'Definition' tab for this method. The 'Name' is 'drill down'. The 'WSDL URL' is 'ces/biws?wsdl=1&cuid=AcaD.O19M3pPm4Jd1eHyNd0'. The 'Method' is 'Drill_Block1'. The 'Web Service URL' is 'Drill_Block1'. Below these fields are two sections: 'Input Values' and 'Output Values'. The 'Input Values' section contains a tree view with 'Drill_Block1' expanded, showing 'login', 'password', 'drillPath' (with sub-items 'from' and 'value'), and 'drillOperation'. The 'Output Values' section contains a tree view with 'Drill_Block1Response' expanded, showing 'table' (with sub-item 'row' and sub-sub-item 'cell'), 'headers' (with sub-item 'row' and sub-sub-item 'cell').

- Link to drilldown tutorial is posted in the Useful Resources section

Limitations and Workarounds

Dynamic Columns Unsupported

- Cannot handle dynamic column lengths. For example we may have a crosstab that contains a 12 month and 6 month trend.

Report Filters Applied to: Report 1

And

- Year In list: 2004
- Store name In list: e-Fashion Austin

12 Month Trend

	1	2	3	4	5	6	7	8	9	10	11	12
	January	February	March	April	May	June	July	August	September	October	November	December
e-Fashion Austin	\$82,337	\$48,126	\$67,428	\$59,418	\$61,788	\$32,833	\$34,157	\$12,826	\$35,000	\$41,075	\$35,977	\$50,161

↓

Report Filters Applied to: Report 1

And

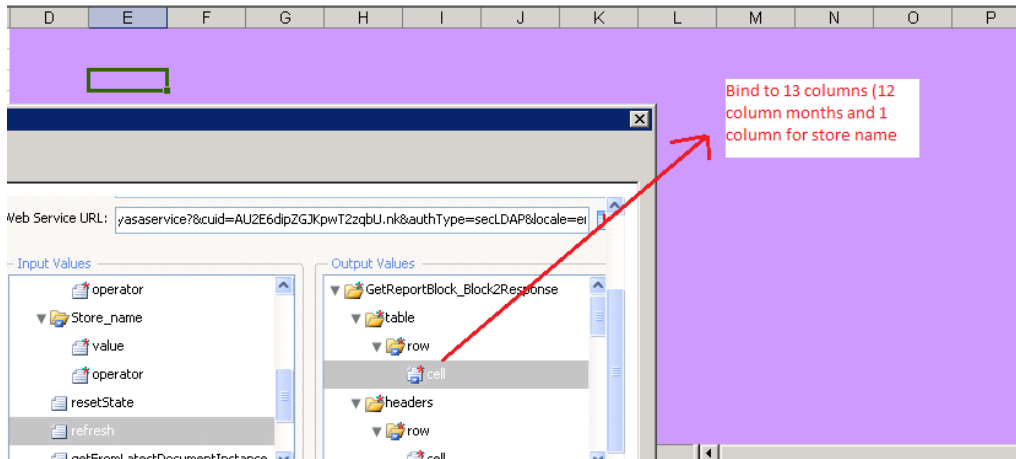
- Year In list: 2004
- Store name In list: e-Fashion Austin
- Month Between: 7; 12

6 Month Trend

	7	8	9	10	11	12
	July	August	September	October	November	December
e-Fashion Austin	\$34,157	\$12,826	\$35,000	\$41,075	\$35,977	\$50,161

Limitations and Workarounds - cont

- Since 12 month's is the max. Our max amount of columns should be 13 columns. Therefore we bind to 13 columns



- When it is at 12 months, then we are okay.

	1	2	3	4	5	6	7	8	9	10	
	January	February	March	April	May	June	July	August	September	October	November
e-Fashion	106906.3	76694.4	130829.1	90100.5	89261.4	94245.9	96807.2	71810	126180.4	119160.9	106906.3
e-Fashion	83637.3	60773.2	75890.4	71267.3	86464.2	62796.8	72316	53530	111617.5	95670.6	83637.3
e-Fashion	116259.6	53409.7	85988.5	90182.5	170065.8	94476	71732.8	54914.6	146538.9	81115.2	116259.6
e-Fashion	82188.4	49653.3	72912.2	71550.3	81342	60770.3	64337.5	49775.4	118776	80313.4	82188.4
e-Fashion	75733.8	55309	84831.4	66695.8	73982	54011.4	59018.5	43108.5	101939.2	90521.2	75733.8
e-Fashion	100280.6	54576.1	78518.6	81334.7	98943.4	65237.8	66236.3	47384.7	107135.8	80979.2	100280.6
e-Fashion	133034.6	72854.8	132911.9	116452.5	146417.3	111538.4	94615.4	68870.7	149522.4	125338.9	133034.6
e-Fashion	171008.9	96317	154063.6	139593.1	177117.8	107156	136476.1	79134.6	216604.1	163395.5	171008.9
e-Fashion	85676.5	42191.9	76013.8	64080.2	86730.8	70658.2	67346.4	45599.7	102623	73108.6	85676.5
e-Fashion	200682.4	90074.2	161120.9	132749.4	222791.3	178331.7	197205.6	100840.7	252312.9	157710.2	200682.4
e-Fashion	120032.5	72989.1	102261.5	83225	132370.5	106148.7	115980.1	69509.7	178397.8	124721.6	120032.5

Limitations and Workarounds - cont

- But as you can see when we try 6 months, the number of columns does not automatically shrink. Thus the 2nd row continues instead of skipping to the next line.

	1	2	3	4	5	6	January	February	March	April	May	
June												
e-Fashion	106906.3	76694.4	130829.1	90100.5	89261.4	94245.9	e-Fashion	83637.3	60773.2	75890.4	71267.3	86
62796.8	e-Fashion	116259.6	53409.7	85988.5	90182.5	170065.8	94476	e-Fashion	82188.4	49653.3	72912.2	71
81342	60770.3	e-Fashion	75733.8	55309	84831.4	66695.8	73982	54011.4	e-Fashion	100280.6	54576.1	78
81334.7	98943.4	65237.8	e-Fashion	133034.6	72854.8	132911.9	116452.5	146417.3	111538.4	e-Fashion	171008.9	9
154063.6	139593.1	177117.8	107156	e-Fashion	85676.5	42191.9	76013.8	64080.2	86730.8	70658.2	e-Fashion	200
90074.2	161120.9	132749.4	222791.3	178331.7	e-Fashion	120032.5	72989.1	102261.5	83225	132370.5	106148.7	e-Fa
117250.8	65189.4	125915.4	120826.6	150222.7	94481.5	e-Fashion	108675	73419.8	96913	94271.5	98438.1	70

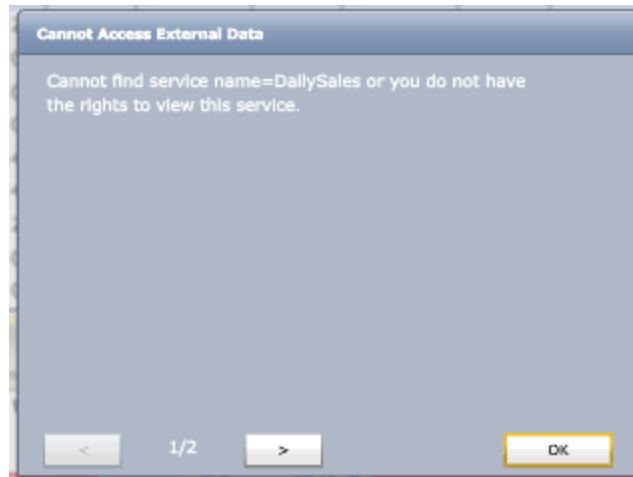
2nd row starts ahead of time

Workaround

- Must add a separate BI Web Service for each column combination

Limitations and Workarounds - cont

- Overloaded when too much reloading activity



Workaround

- Users can be trained not to reload like crazy. BOBJ XI 3.1 SP4 has an option to reset a session after a refresh.

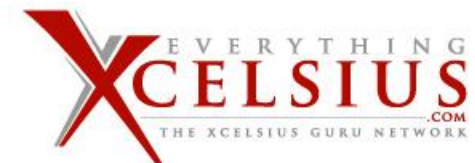
Limitations and Workarounds - cont

Cannot filter on WEBI Variables

- In some cases we may need to create WEBI variables that we can filter on. We get the following error on the filter: *cannot Access External Data: Argument Exception:Enable to apply filter on formulae object*

Workaround

- SAP is working on a fix for the bug.
- For now you can try creating an object in the Universe with the same type of calculation.



Limitations and Workarounds - cont

Prompt Query does not work when merging multiple queries on WEBI

- In some cases we may need to merge multiple queries for a data set. I.e: when doing an outer join. The data returned is always the same no matter what you put on the prompt value.

Workaround

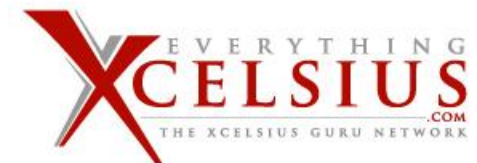
- Make sure the same *prompt* exists in both queries

WEBI Scheduler does not support dynamic prompts

- The WEBI Scheduler only supports static prompts. Makes it tough to have a prompts such as a “Today” prompt.

Workaround

- On the query filter you can use “*object from this query*”. The object will point to a Today field in the database which updates daily.



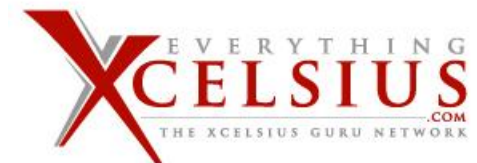
Limitations and Workarounds - cont

Cannot dynamically choose which saved WEBI Instance to use

- Right now we can only choose the latest WEBI Instance when selecting data to display. If we were able to dynamically select which instance to use, it would be great since we would have data auditing capability without having to store a ton of extra data in the database.

Workaround

- Unfortunately none at the moment



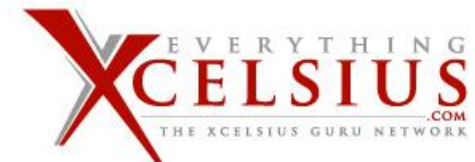
BI Web Service Resources

Great Resources to help you get started

- EverythingXcelsius Tutorial - <http://everythingxcelsius.com/xcelsius-training/xcelsius-and-business-intelligence-web-services-biws/3642>
- Another Introductory Tutorial - <http://bi.stieper.dk/using-bi-web-services-in-xcelsius-part-1-357/>
- Provides information on all the available BI Web Service parameters – **Chapter 27 Sharing Web Intelligence Content with other Web Applications of the WEBI Rich Client Documentation**

More advanced resources

- Tutorial on how to create drill downs with BI Web Services - <http://blog.davidg.com.au/2011/03/drill-down-in-xcelsius-using-bi.html>



Question and Answers

