How to Cook a BI Story

ITOUG Tech Day 2017

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rittmanmead

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- 7+ years experience with OBIEE
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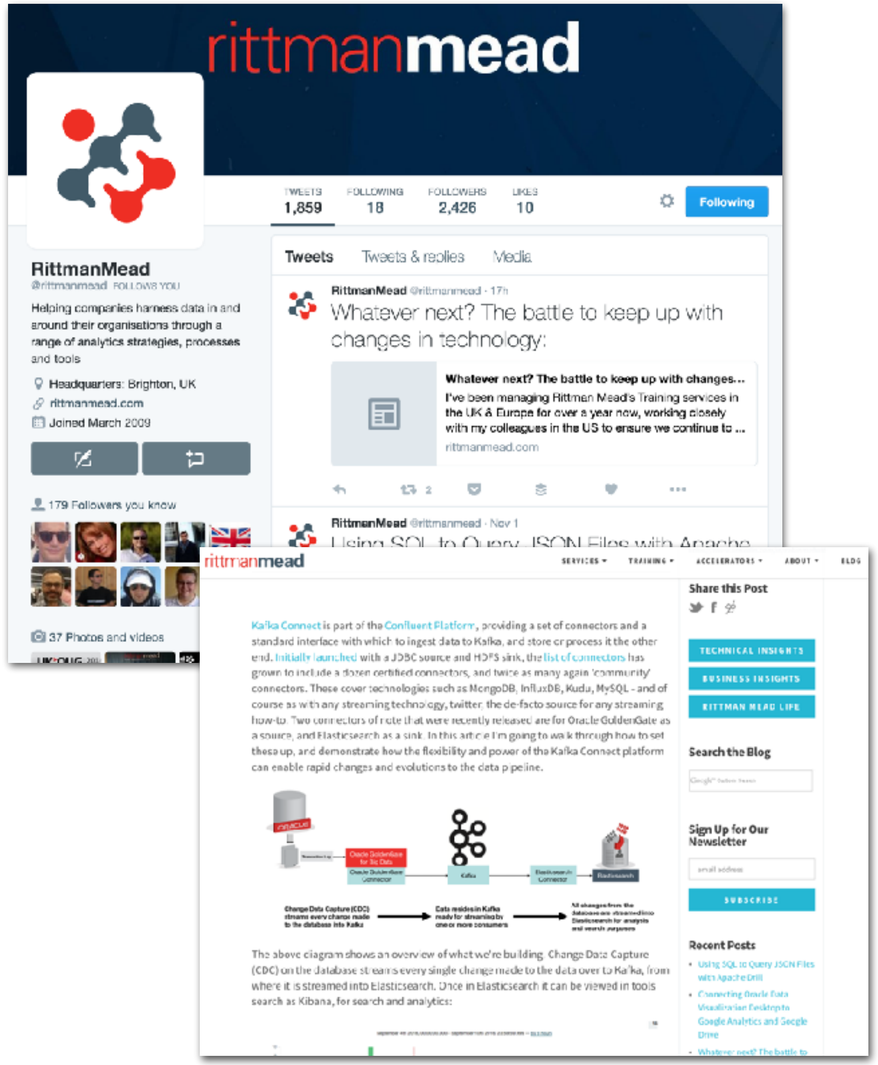
- Email: federico.venturin@rittmanmead.com
- Twitter: **@barretbse**
- IRC: **barretbse** / **#obihackers** / **freenode**

Rittman Mead

- Oracle Gold Partner with offices in the UK and USA
- 70+ staff delivering Oracle BI, DW, Big Data and Advanced Analytics projects
- Significant web presence with the Rittman Mead Blog (**http://www.rittmanmead.com**)



Why Am I Talking to You About This?

I was raised by my parents to believe that you had a moral obligation to try and help save the world.

—Anne Lamott

About Bad Dashboard Design

- Bad dashboard design can have a profound impact on user **adoption** and overall system **performance**
- Unfortunately, the standard practice for laying out most dashboards and reports is often to simply fit everything on the page in muddled mass of information

About BI Story

Like an author writing a book, there should be a starting point, themes, segues between chapters, and a conclusion.

—Data Fluency

As an author communicating with data, your objective is to help readers travel a path through the presented data in a way that they can move their understanding forward.

— Data Fluency

To Be an Author, or to Be a Chef?

- You have to **manage** the kitchen (catalog), and **choose** quality ingredients (data) at the food market (RPD) to **prepare** your tasting menu (BI story)

The End Users: Expectation

The End Users: Reality

Knowing End Users' Tastes

- Do **not** ask for BI Story recipes
  - A must for some may be a true culinary sin

Knowing End Users' Tastes

- What **decisions** do they make?
- What **questions** do they need answered?
- What **information** are they using on a daily basis?

- How much **time** do they have?
- Do they enjoy **digging** into the numbers?
- How **familiar** are they with the data?

Buying the Ingredients

About Metrics

- Identify the most important **metric**, a.k.a. the protagonist
  - Unrelated metrics should not be mixed. Ever!
  - Similar metrics can be compared

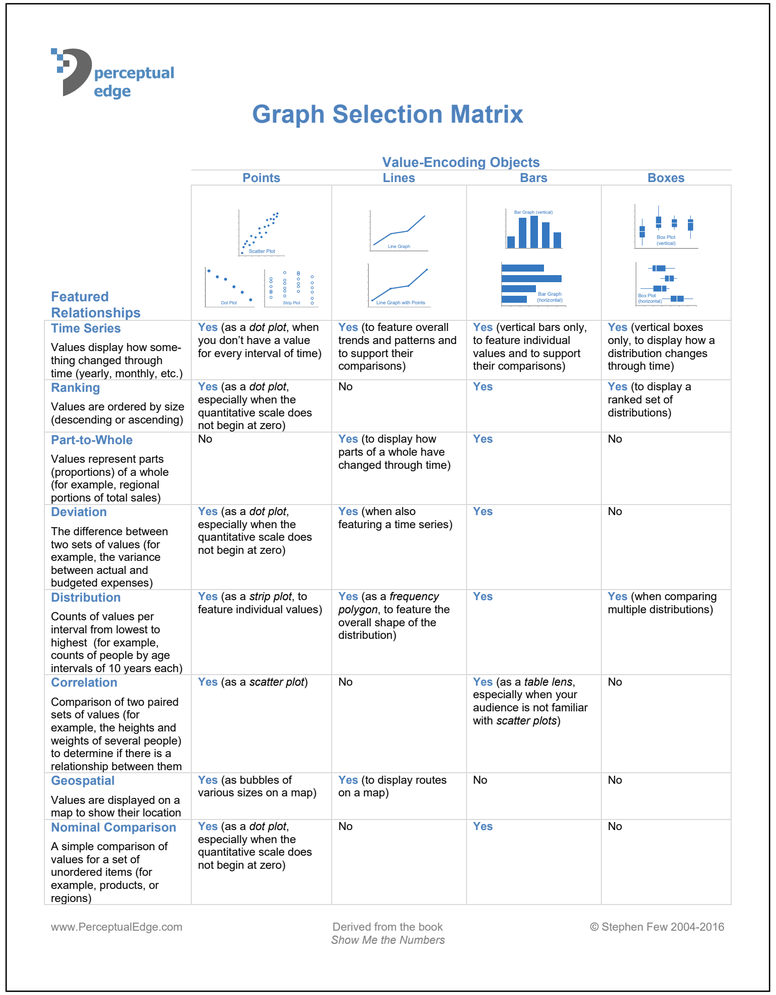
About Business Drivers

- Identify the most important **business drivers**
  - There should be no more than 3 or 4

Cooking the Ingredients

Do your Homework

- Consider **pros** and **cons** of each visualisation
  - Example: **www.perceptualedge.com/articles/misc/Graph_Selection_Matrix.pdf**



perceptual edge

Graph Selection Matrix

Featured Relationships	Value-Encoding Objects: Points	Lines	Bars	Boxes
Time Series Values display how something changed through time (yearly, monthly, etc.)	**Yes** (as a *dot plot*, when you don't have a value for every interval of time)	**Yes** (to feature overall trends and patterns and to support their comparisons)	**Yes** (vertical bars only, to feature individual values and to support their comparisons)	**Yes** (vertical boxes only, to display how a distribution changes through time)
Ranking Values are ordered by size (descending or ascending)	**Yes** (as a *dot plot*, especially when the quantitative scale does not begin at zero)	No	**Yes**	**Yes** (to display a ranked set of distributions)
Part-to-Whole Values represent parts (proportions) of a whole (for example, regional portions of total sales)	No	**Yes** (to display how parts of a whole have changed through time)	**Yes**	No
Deviation The difference between two sets of values (for example, the variance between actual and budgeted expenses)	**Yes** (as a *dot plot*, especially when the quantitative scale does not begin at zero)	**Yes** (when also featuring a time series)	**Yes**	No
Distribution Counts of values per interval from lowest to highest (for example, counts of people by age intervals of 10 years each)	**Yes** (as a *strip plot*, to feature individual values)	**Yes** (as a *frequency polygon*, to feature the overall shape of the distribution)	**Yes**	**Yes** (when comparing multiple distributions)
Correlation Comparison of two paired sets of values (for example, the heights and weights of several people) to determine if there is a relationship between them	**Yes** (as a *scatter plot*)	No	**Yes** (as a *table lens*, especially when your audience is not familiar with *scatter plots*)	No
Geospatial Values are displayed on a map to show their location	**Yes** (as bubbles of various sizes on a map)	**Yes** (to display routes on a map)	No	No
Nominal Comparison A simple comparison of values for a set of unordered items (for example, products, or regions)	**Yes** (as a *dot plot*, especially when the quantitative scale does not begin at zero)	No	**Yes**	No

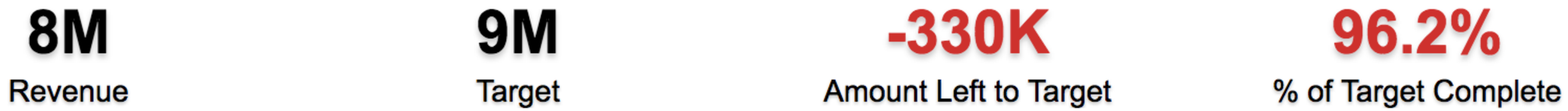
www.PerceptualEdge.com — Derived from the book *Show Me the Numbers* — © Stephen Few 2004-2016

Good Recipe Guidelines

- Good recipes must present **tasty** information, be **easy** to understand, and be served **quickly**
- Prefer performance tile, line-bar and table views
- Use action links to provide guided navigation

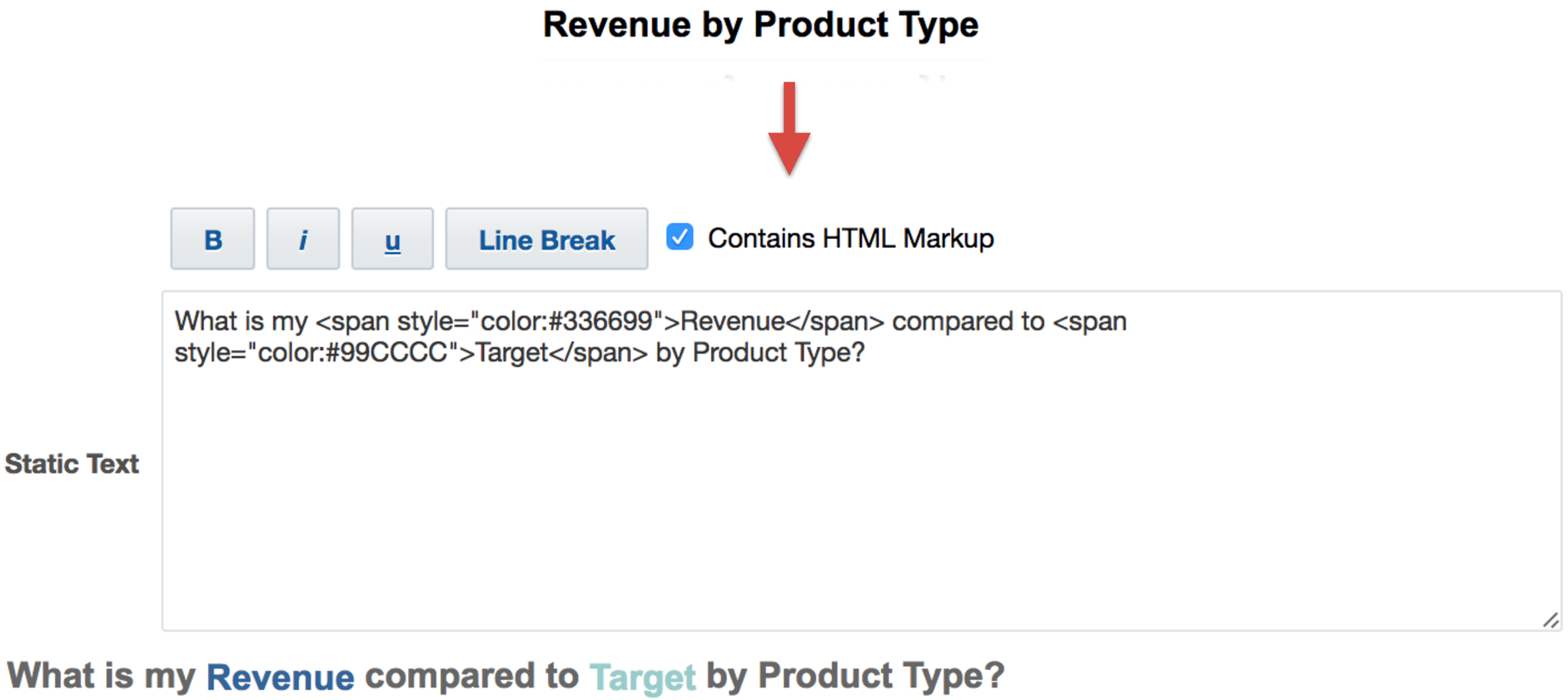
About Performance Tiles

- Create a **Performance Tile** view for each key metric
  - Ideal way of displaying and calling out attention to a metric
  - Ideal place to apply conditional formatting rules



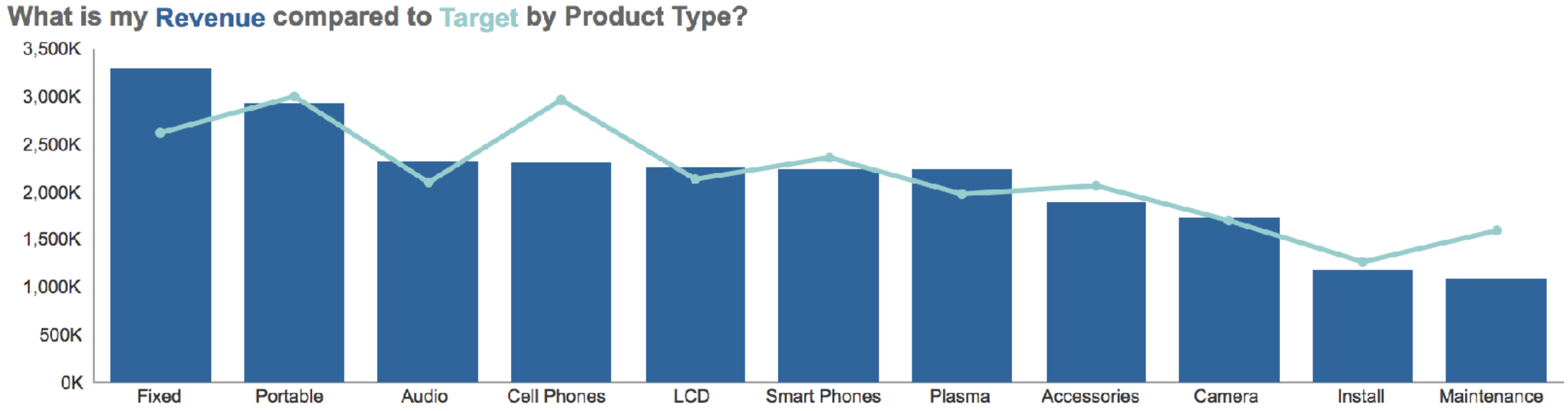
About Titles

- **Questions** are better than report titles



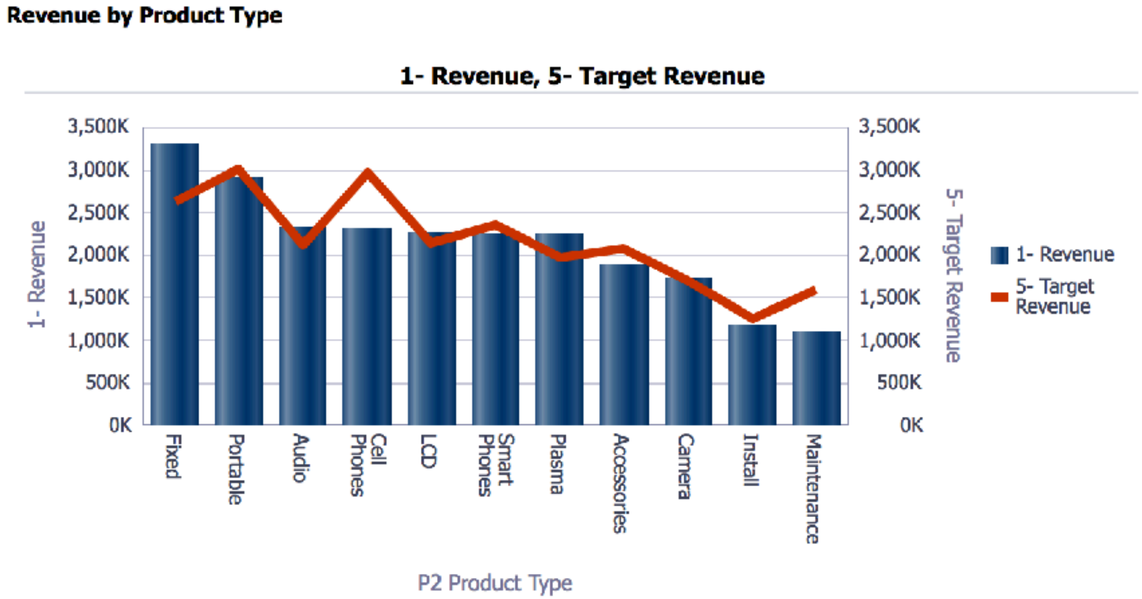
About Line-Bar Charts

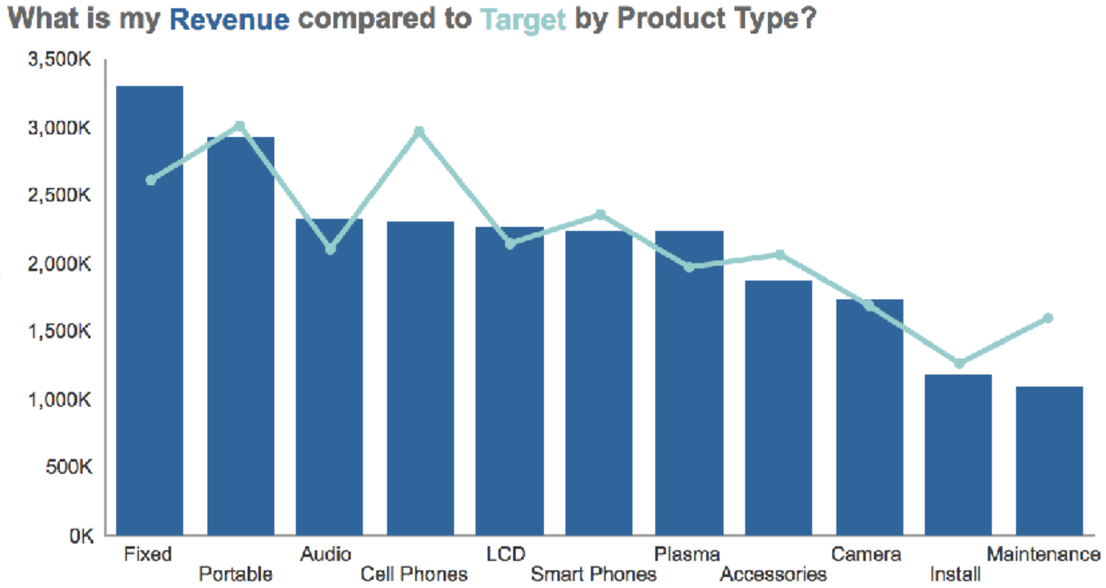
- Create a **Line-Bar** view for each business driver
  - Clearly indicates how the values relate to one another
  - Makes it easy to compare and see the ranked order of values



Don’t Accept the Default

- Tale of two charts





About Tables

- Create a **Table** view for each business driver
  - Allows end users digging into the numbers
  - Ideal way of looking up or comparing individual values

What is my Revenue compared to Target by Product Type?

Product Type	Revenue	Target	Amount Left to Target	% of Target Complete	% of Total Revenue
Games	6,225,665	5,641,037	584,628	110.4%	26.5%
Communication	4,548,963	5,341,177	-792,214	85.2%	19.4%
TV	4,496,292	4,125,642	370,651	109.0%	19.1%
Electronics	4,210,423	4,191,852	18,571	100.4%	17.9%
Services	2,281,214	2,863,542	-582,328	79.7%	9.7%
Digital	1,737,442	1,699,785	37,657	102.2%	7.4%
Grand Total	**23,500,000**	**23,863,035**	**-363,035**	**98.5%**	**100.0%**

Don’t Accept the Default

- Tale of two tables

Revenue by Product Type

Product Type	Revenue	Target	Amount Left to Target	% of Target Complete	% of Total Revenue
Fixed	3,299,769	2,621,311	678,458	125.9%	14.0%
Portable	2,925,896	3,019,726	-93,829	96.9%	12.5%
Audio	2,327,310	2,115,208	212,101	110.0%	9.9%
Cell Phones	2,310,782	2,976,084	-665,302	77.6%	9.8%
LCD	2,263,291	2,144,993	118,298	105.5%	9.6%
Smart Phones	2,238,182	2,365,094	-126,912	94.6%	9.5%
Plasma	2,233,002	1,980,649	252,353	112.7%	9.5%
Accessories	1,883,113	2,076,643	-193,530	90.7%	8.0%
Camera	1,737,442	1,699,785	37,657	102.2%	7.4%
Install	1,185,223	1,264,975	-79,752	93.7%	5.0%
Maintenance	1,095,991	1,598,567	-502,576	68.6%	4.7%
Grand Total	**23,500,000**	**23,863,035**	**-363,035**	**98.5%**	**100.0%**

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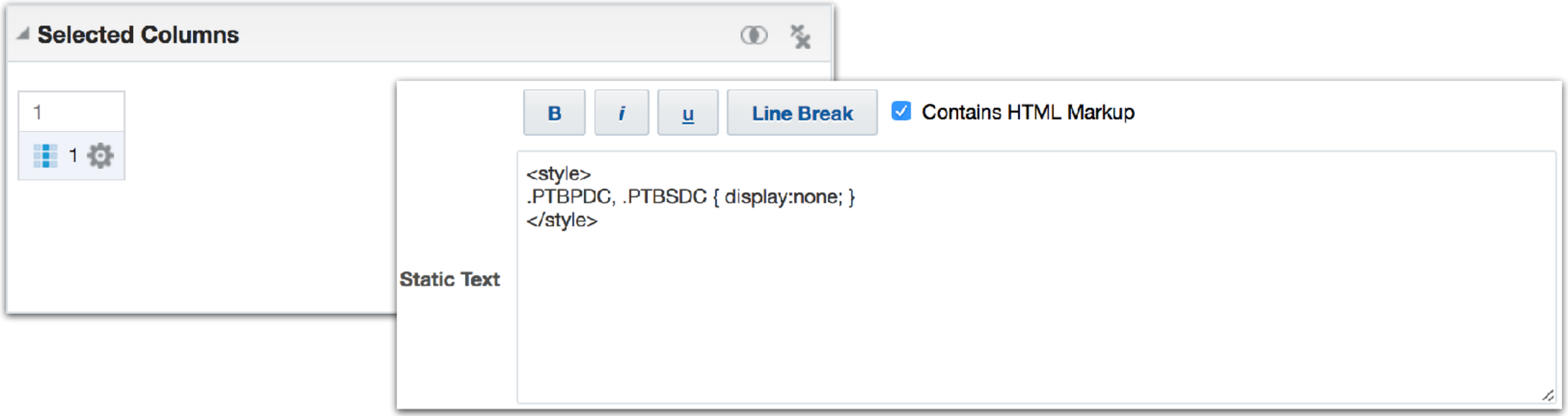
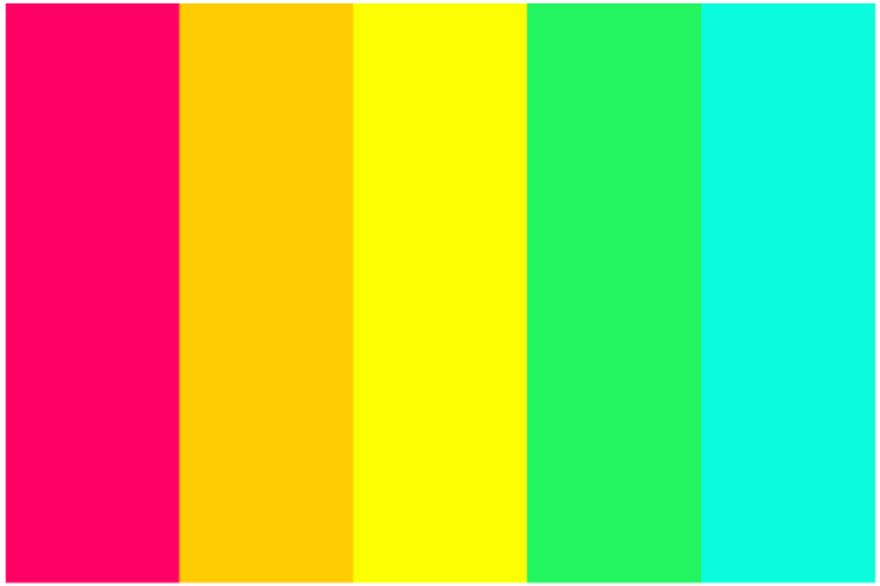
Don’t Accept the Default

- Remove **blank space** above tables and pivot tables
  - Create a dummy analysis to add a custom CSS rule
  - It prevents access to `Move Columns` run-time option



About Colours

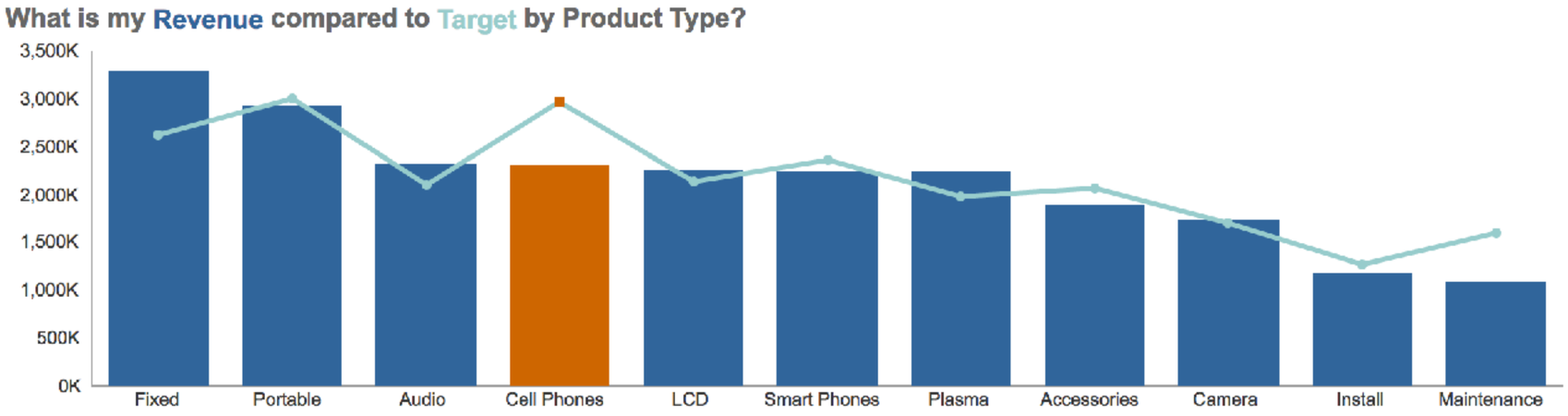
- Unnatural colours make me feel **alarmed** and **unnerved**



- Soft pastel colours make me feel **calm** and **cool**

About Colours

- Use one colour to visualise one element, and be **consistent**
- Use **different** colours when they correspond to **different** things, such as comparing two measures
- Bold colours should only be used to **highlight** what's most important



Plating Up

Jakob's Law of the Web User Experience

Users spend most of their time on other sites.

—Jakob Nielsen

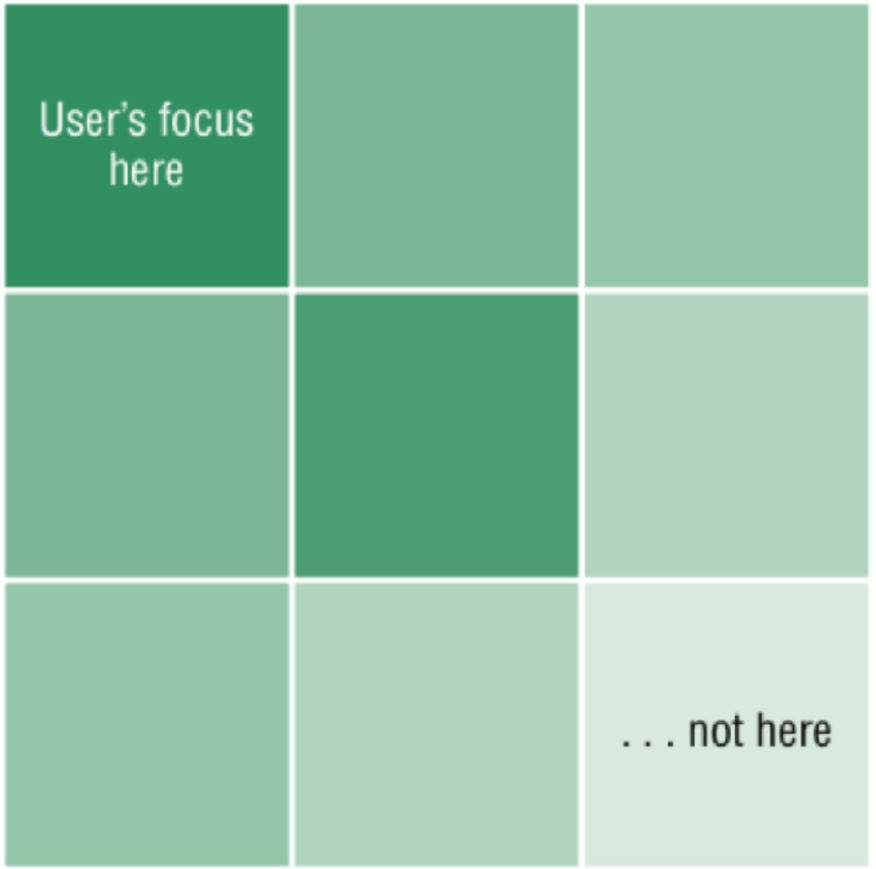
- This means that users prefer your site to work the **same** way as all the other sites they already know

Dashboard Design Guidelines

- Decide on the dashboard layout and be consistent
- Design dashboards to the resolution of end users screens
- Do not try to build too much information onto each page
- Use the same chart type on a dashboard page
- Place prompts down the left hand side of the page

Dashboard Design Guidelines

- Guide user **focus** to what is most important



Source: Data Fluency

Dashboard Design Guidelines

- People do not like to scroll, but they do if the layout is designed to encourage scrolling
- Information in a one-column format gets read more extensively than in multiple-column format
- Visual breaks in design serve as barriers to seeing contents

Source: Eyetrack III

Example of a Bad Layout

FILTERS

Year: 2010
Product Type: (All Column Values)
Company: (All Column Values)
Office: (All Column Values)
Apply | Reset

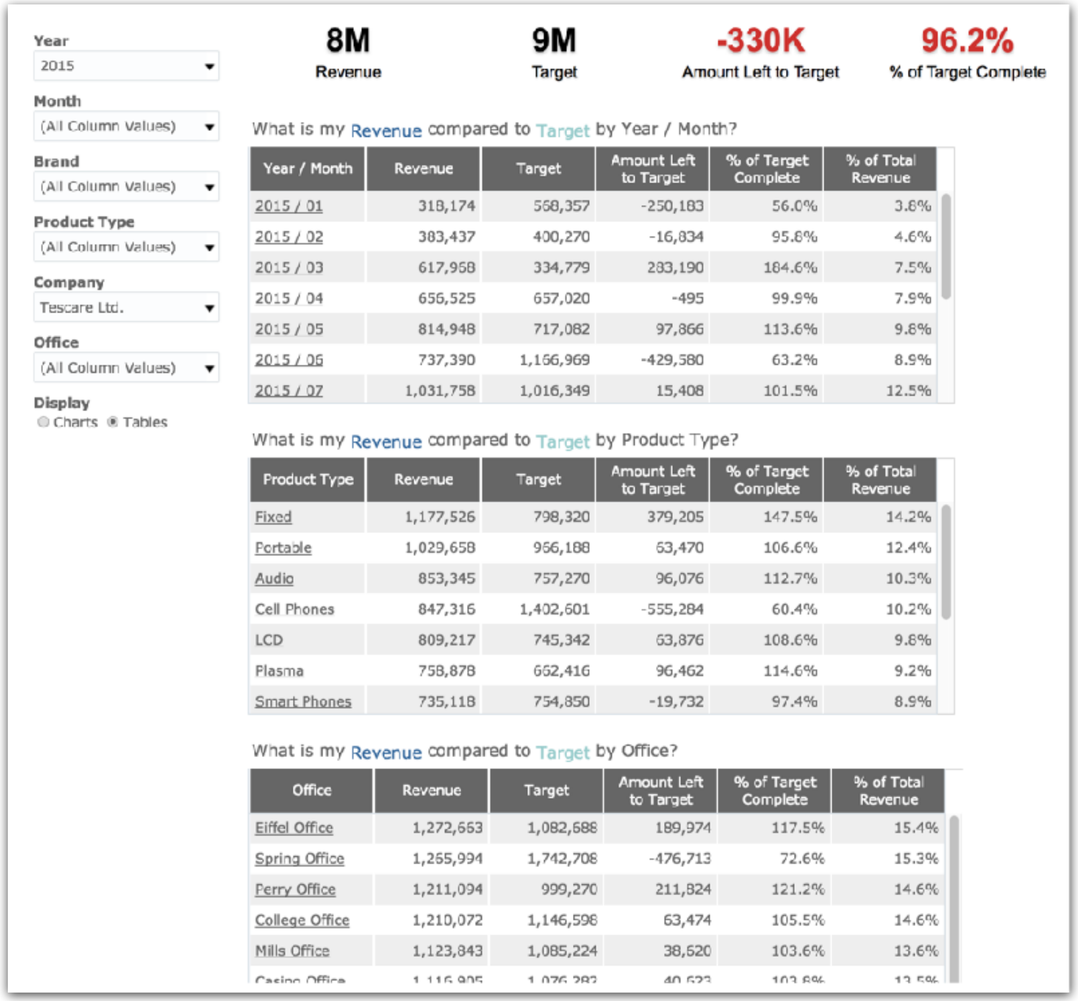
Revenue

Revenue vs Target Monthly Report
Time run: 6:04:54 AM

Brand: All Brands

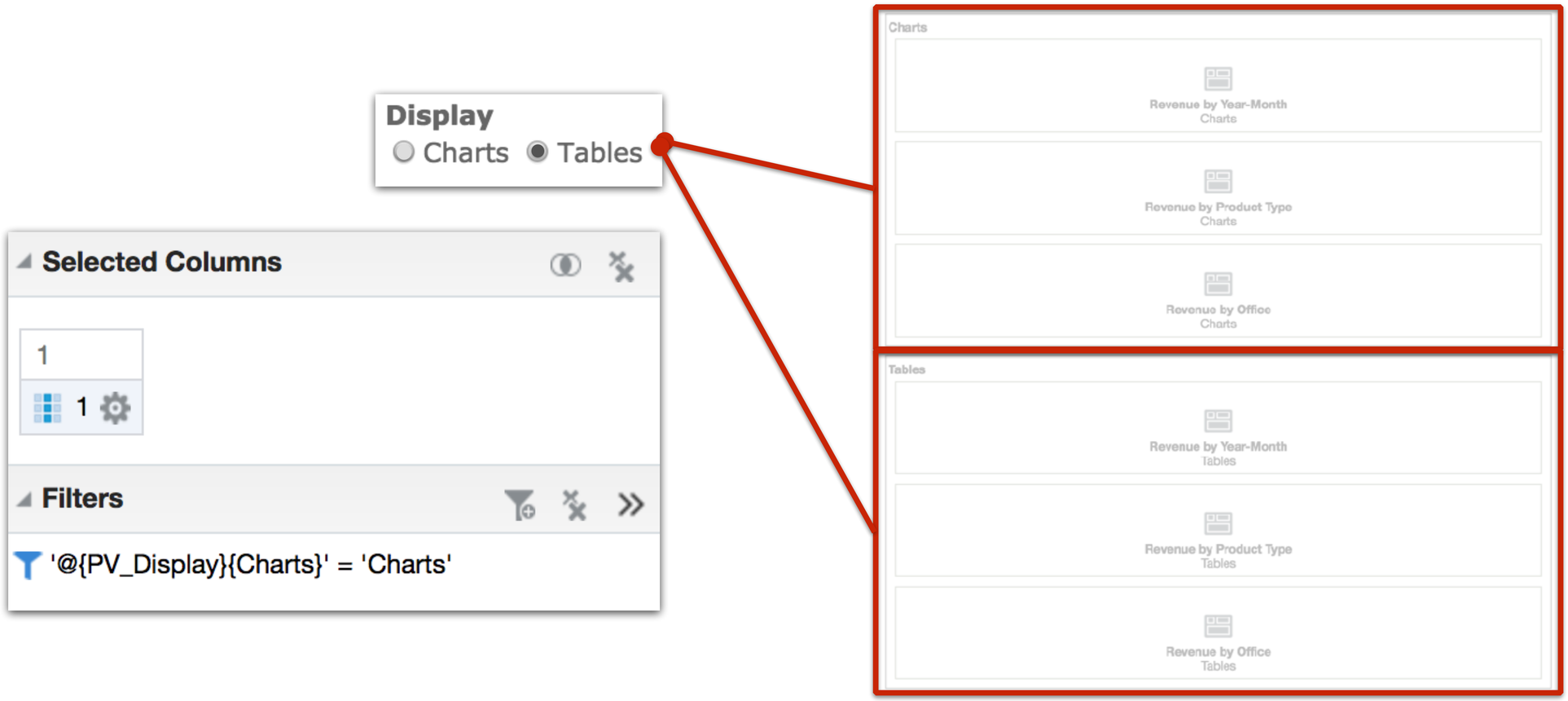
Product Type	Company	Office	2010 / 01 Revenue	2010 / 01 Target	2010 / 01 Amt Left to Target	2010 / 01 % of Target Complete	2010 / 02 Revenue	2010 / 02 Target	2010 / 02 Amt Left to Target	2010 / 02 % of Target Complete	2010 / 03 Revenue	2010 / 03 Target	2010 / 03 Amt Left to Target	2010 / 03 % of Target Complete	20 R
Accessories	Genmind Corp	Copper Office	4,170	2,504	1,666	166.5%	2,222	4,231	-2,009	52.5%	6,938	4,794	2,144	144.7%	
		Figueroa Office	2,034	2,227	-193	91.4%	4,554	3,485	1,069	130.7%	4,884	4,515	369	108.2%	
		Guadalupe Office	2,461	2,720	-259	90.5%	3,207	3,788	-581	84.7%	6,621	4,625	1,997	143.2%	
		Morange Office	3,089	3,297	-208	93.7%	4,581	3,560	1,021	128.7%	4,914	4,457	457	110.3%	
		River Office	2,052	2,307	-256	88.9%	3,480	3,684	-204	94.5%	6,257	4,503	1,753	138.9%	
	Genmind Corp Total		**13,806**	**13,055**	**750**	**105.7%**	**18,044**	**18,747**	**-704**	**96.2%**	**29,613**	**22,894**	**6,720**	**129.4%**	
	Stockplus Inc.	Blue Bell Office	3,587	2,908	679	123.3%	3,127	3,477	-351	89.9%	5,764	4,066	1,698	141.7%	
		Eden Office	4,264	4,466	-202	95.5%	3,358	8,136	-4,778	41.3%	6,079	5,600	479	108.6%	
		Foster Office	2,073	2,236	-163	92.7%	5,022	3,789	1,233	132.5%	4,363	4,035	328	108.1%	
		Glenn Office	3,076	2,818	258	109.1%	4,607	4,573	33	100.7%	4,738	4,220	518	112.3%	
		Madison Office	2,101	2,221	-120	94.6%	3,106	3,342	-236	92.9%	5,892	4,023	1,869	146.5%	
		Montgomery Office	3,150	2,448	702	128.7%	3,323	3,996	-673	83.1%	5,992	4,191	1,800	143.0%	
		Sherman Office	2,874	2,130	744	134.9%	4,553	3,512	1,041	129.6%	4,498	4,329	169	103.9%	
		Tellaro Office	2,015	2,185	-171	92.2%	4,800	3,811	990	126.0%	4,792	4,366	427	109.8%	
	Stockplus Inc. Total		**23,139**	**21,412**	**1,727**	**108.1%**	**31,895**	**34,636**	**-2,742**	**92.1%**	**42,119**	**34,830**	**7,289**	**120.9%**	
	Tescare Ltd.	Casino Office	3,175	2,297	878	138.2%	3,004	3,477	-473	86.4%	5,808	4,106	1,702	141.5%	

Example of a Good Layout



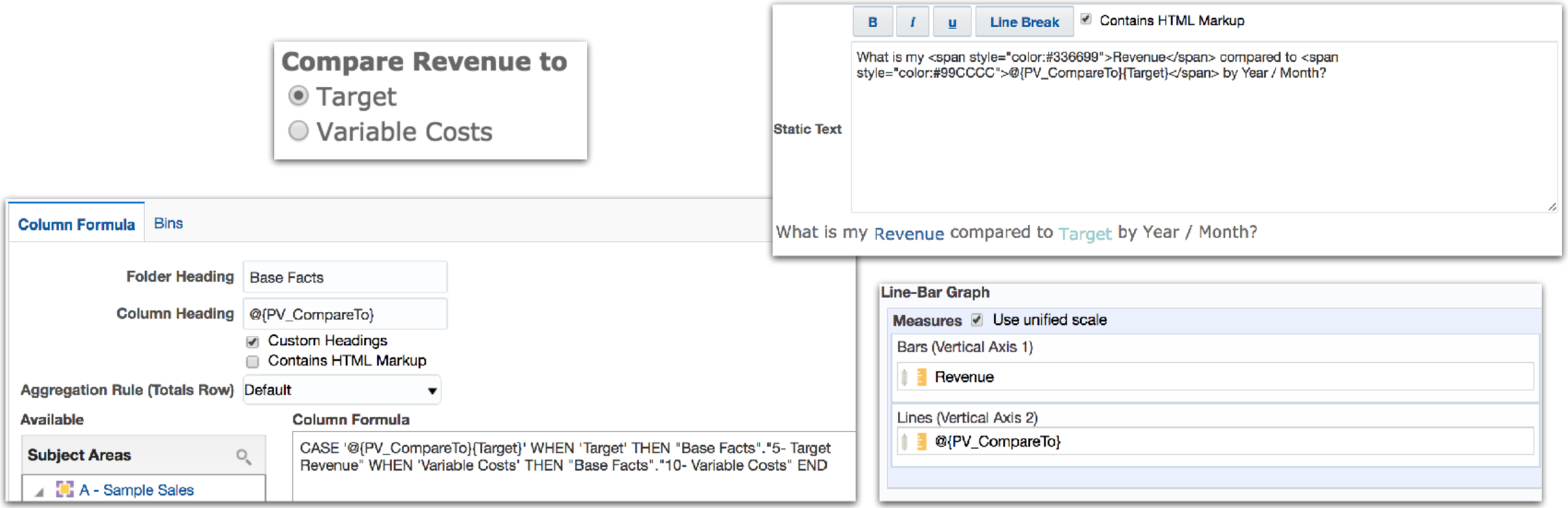
Let the User Choose

- Allow the user to switch between different **views**



Let the User Choose

- Allow the user to switch between different **metrics**



Street Food Options

The Pain

We're thinking about designing dashboards that can be accessed from desktop and mobile devices with the minimum development effort required…

— A client

OBIEE has no Responsive Web Design (RWD) capability

Option 1: Oracle BI Mobile HD

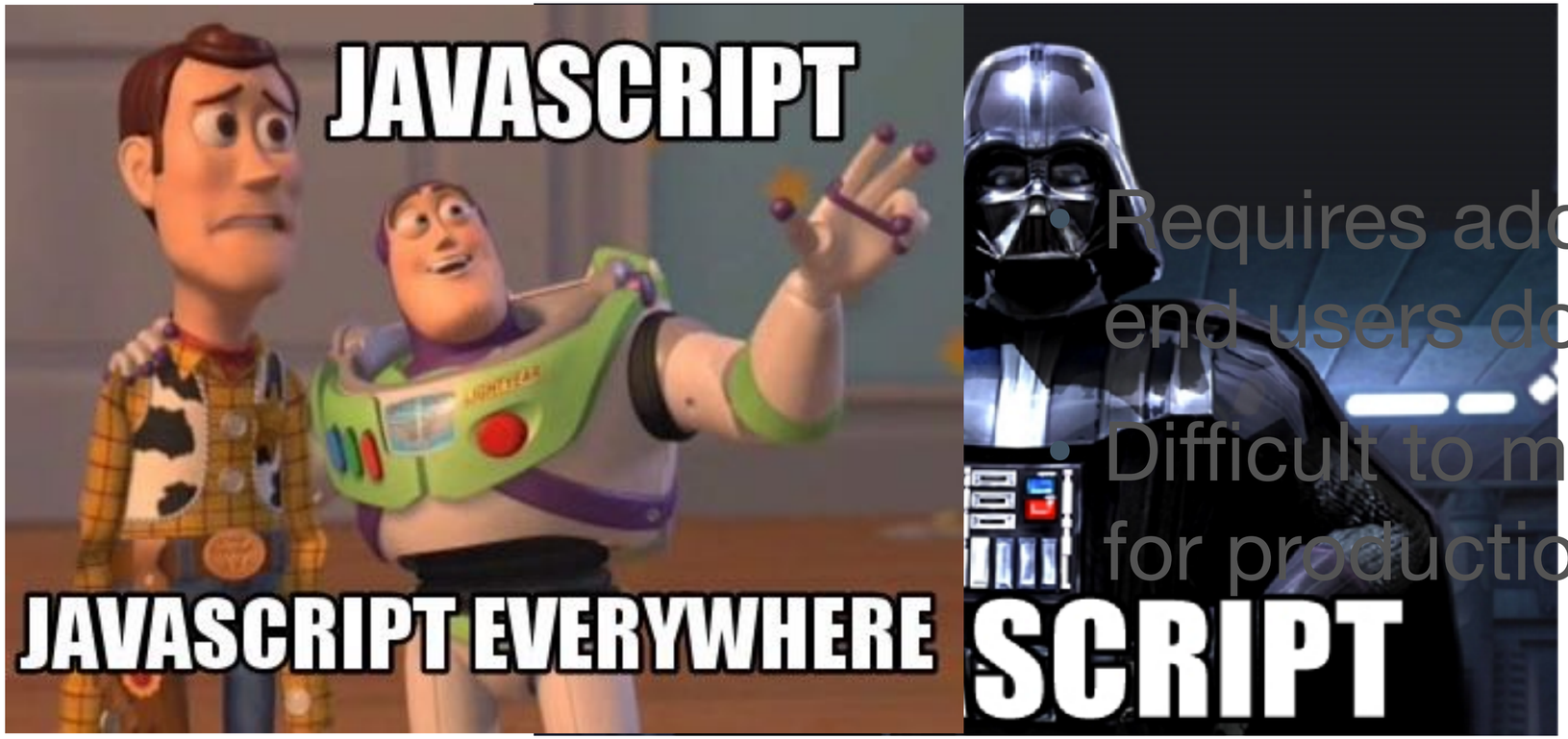
- Allows to view and interact with OBIEE content on applicable mobile devices
- Does not resize content to fit the screen size on mobile devices

Option 2: Oracle BI Mobile App Designer

- Design-time studio and run-time engine for creating visually engaging apps
- Detects your device screen size and automatically adjusts the app display
- Doubles development effort

Option 3: Hacking OBIEE

- You can use JavaScript to build custom visualisations and/or automatically turn existing reports into responsive ones



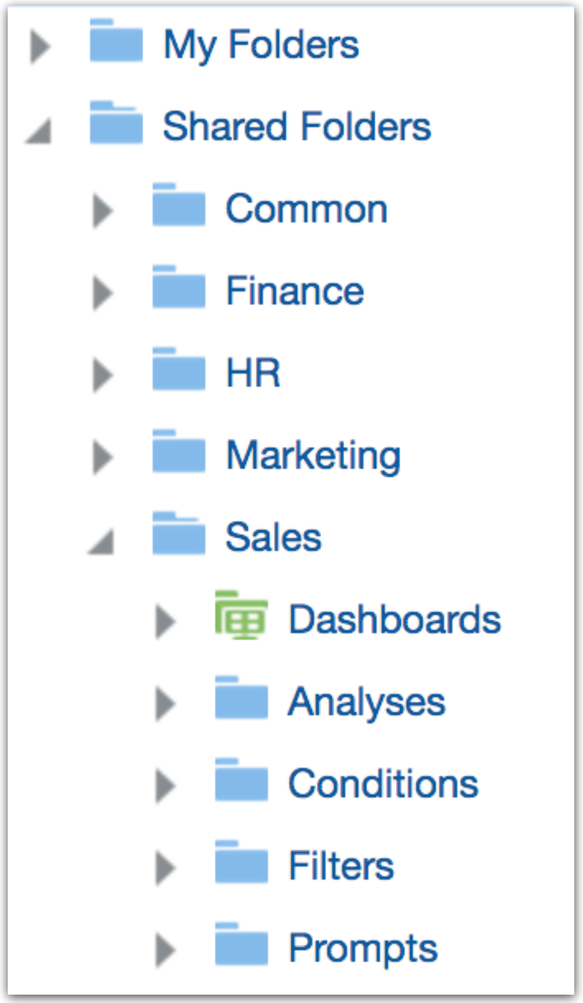
- Requires additional skills that end users don't have
- Difficult to maintain, not good for production level

The Remedy

- Use Oracle BI Mobile HD to view content on mobile devices
- Design dashboards to the resolution of tablet screens
- Add ad-hoc compound layouts for mobile screens
- Allow the user to switch between layouts

Working Clean in the Kitchen

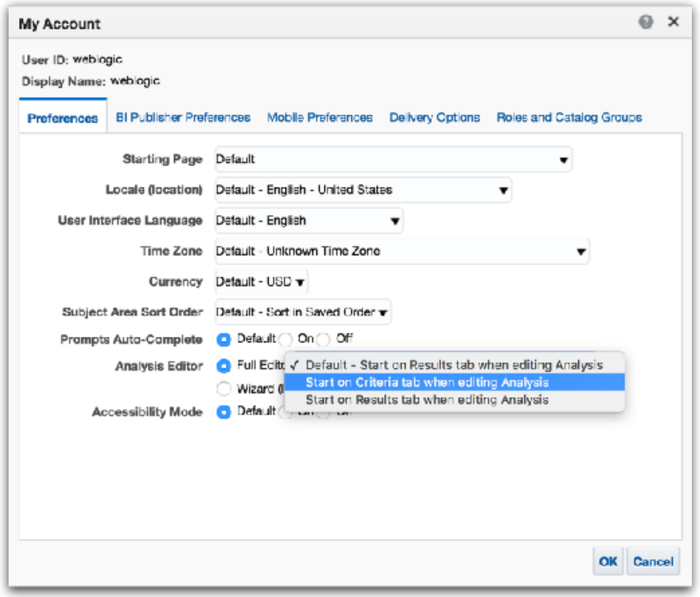
Catalog Layout

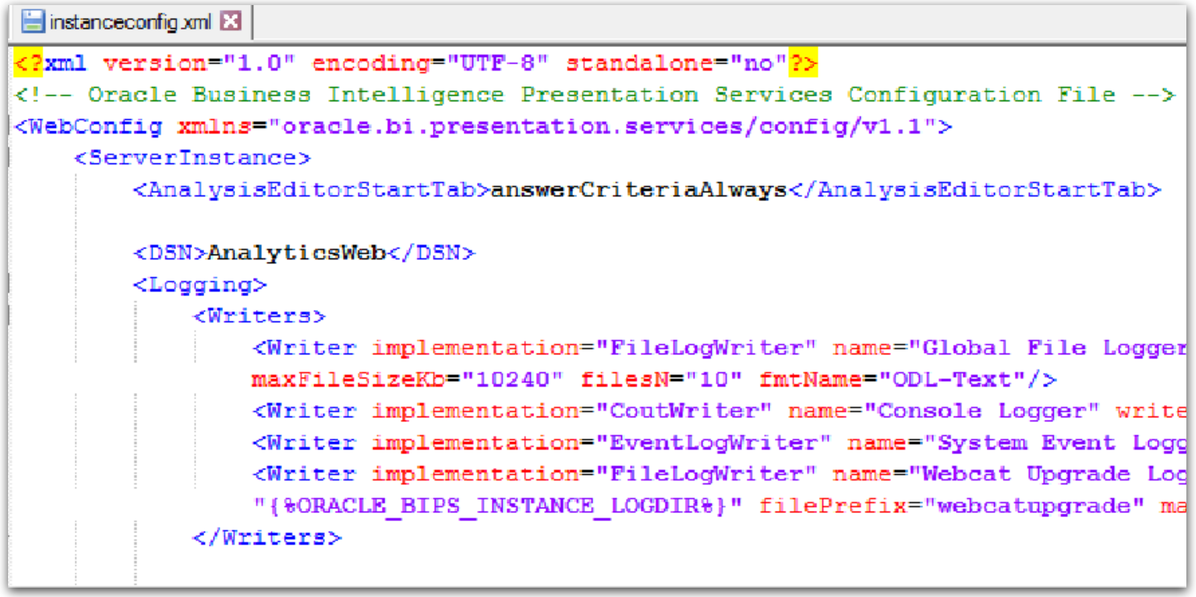


- Create a shared folder per department
- Create a folder for each of the common object types in each department folder
- Put universally useable objects into a shared folder available to all
- Define and adopt a naming convention

Start Editing on Criteria Tab

- By default OBIEE opens the editor on the Results tab
  - This triggers the report's query execution
- **Recommendation**: Start the editor on the Criteria tab





Automating Repetitive Tasks

Progress *isn't made by early risers. It's made by* ***lazy*** *men looking for easier ways to do things.*

—Robert A. Heinlein

The Pain

Hopefully a very quick one. We're thinking about applying your tips to all our dashboard base…

— A client

1.000+ dashboards

20-30 clicks to fix a view

Catalog Objects Behind the Scenes

- Each catalog object is actually a XML file

```
<saw:report xmlns:saw="com.siebel.analytics.web/report/v1.1" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/
XMLSchema" xmlns:sawx="com.siebel.analytics.web/expression/v1.1" xmlVersion="201201160">
   <saw:criteria xsi:type="saw:simpleCriteria" subjectArea="&amp;quot;A - Sample Sales&amp;quot;">
      <saw:columns>
         <saw:column xsi:type="saw:regularColumn" columnID="cbcb79ae802ceebf5">
            <saw:columnFormula>
               <sawx:expr xsi:type="sawx:sqlExpression">"Products"."P4  Brand"</sawx:expr></saw:columnFormula></saw:column>
         <saw:column xsi:type="saw:regularColumn" columnID="c607748060ed8c7c5">
            <saw:columnFormula>
               <sawx:expr xsi:type="sawx:sqlExpression">"Base Facts"."1- Revenue"</sawx:expr></saw:columnFormula></saw:column></saw:columns>
      <saw:filter>
         <sawx:expr xsi:type="sawx:comparison" op="equal">
            <sawx:expr xsi:type="sawx:sqlExpression">"Time"."T05 Per Name Year"</sawx:expr>
            <sawx:expr xsi:type="xsd:string">2015</sawx:expr></sawx:expr></saw:filter></saw:criteria>
   <saw:views currentView="0">
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            <saw:edge axis="column" showColumnHeader="rollover"/></saw:edges></saw:view></saw:views></saw:report>
```

The Remedy

- Use OBIEE Session-Based Web Services + your favourite programming language
  - **SAWSessionService**: Provides authentication methods

```
url = 'http://<hostname>:<port>/analytics-ws/saw.dll/wsdl/v7'
client = suds.client.Client(url)
sessionid = client.service['SAWSessionService'].logon(<username>, <password>)
```

  - **WebCatalogService**: Provides methods for managing the catalog

```
analysis = client.factory.create('CatalogObject')
analysis.catalogObject = suds.sax.text.Raw('<![CDATA[' + xml + ']]>')
analysis.itemInfo.path = <path>
analysis.itemInfo.type = 'Object'
analysis.itemInfo.caption = <caption>
analysis.itemInfo.signature = 'queryitem1'
client.service['WebCatalogService'].writeObjects(analysis, 'TRUE', 'TRUE', 'FullDetails', sessionid)
```

Reasons to Automate

- Increase productivity by reducing the time taken to perform repetitive tasks
- Automated processes reduce human errors, and they will always run the same way
- Automated processes do not get bored, and they will always run at the same speed
- Workforce that is not bored by undertaking repetitive task will actually be a happier workforce

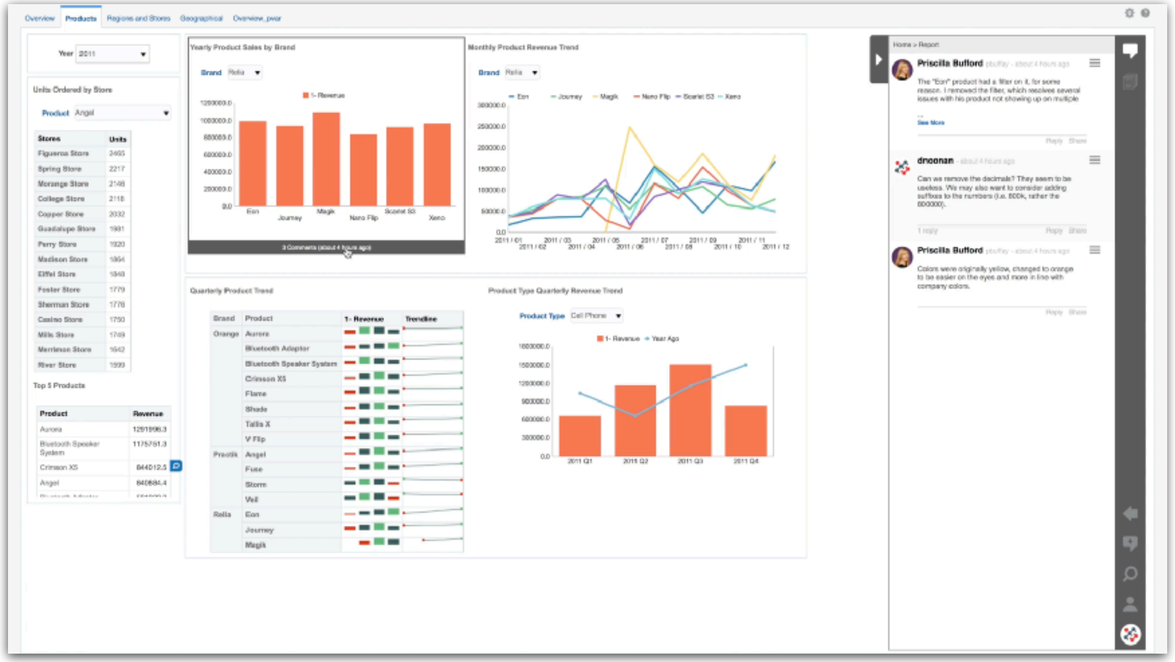
What's Next?

tripadvisor®

ChitChat

- Commentary tool built for OBIEE
  - Allows users to engage in **conversations** within OBIEE, **document** important content on a dashboard, and **integrate** with external channels of communication
  - http://ritt.md/chitchat

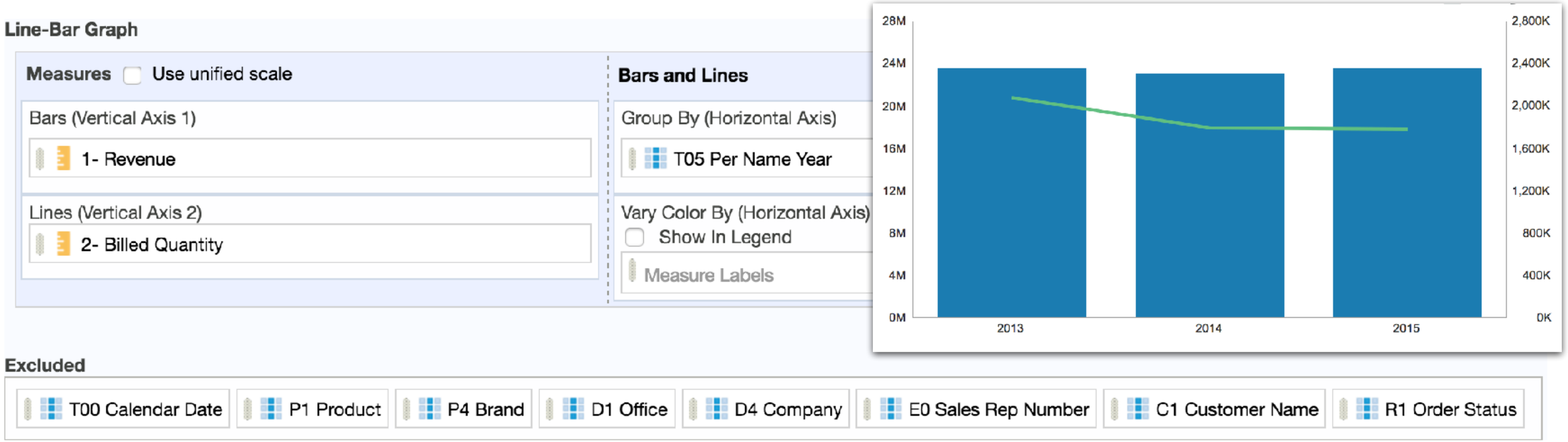
- Verified compatibility



Reducing Saturated Fats Intake

Overcrowded Analyses

- Analysis with an awful lot of columns in Criteria tab and several different views with many excluded columns



Overcrowded Analyses

- OBIEE retrieves results for **all** columns listed in Criteria tab

```
select sum(T42433.Units) as c1,
     sum(T42433.Revenue) as c2,
     T42428.Name as c3,
     T42412.Office_Dsc as c4,
     T42412.Company as c5,
     T42433.Order_Status as c6,
     T42409.Prod_Dsc as c7,
     T42409.Brand as c8,
     T42419.Employee_Key as c9,
     T42404.Calendar_Date as c10,
     T42404.Per_Name_Year as c11,
     T42428.Cust_Key as c12,
     T42409.Prod_Key as c13,
     T42412.Office_Key as c14
from
     BISAMPLE.SAMP_OFFICES_D T42412 /* D30 Offices */ ,
     BISAMPLE.SAMP_EMPL_D_VH T42419 /* D50 Sales Rep (Parent Child Hierarchy) */ ,
     BISAMPLE.SAMP_EMPL_PARENT_CHILD_MAP T42420 /* D51 Closure Table Sales Rep Parent Child */ ,
     BISAMPLE.SAMP_PRODUCTS_D T42409 /* D10 Product (Dynamic Table) */ ,
     BISAMPLE.SAMP_CUSTOMERS_D T42428 /* D60 Customers */ ,
     BISAMPLE.SAMP_TIME_DAY_D T42404 /* D01 Time Day Grain */ ,
     BISAMPLE.SAMP_REVENUE_F T42433 /* F10 Billed Rev */
where  ( T42412.Office_Key = T42433.Office_Key and T42409.Prod_Key = T42433.Prod_Key and T42419.Employee_Key = T42420.Ancestor_Key and
     T42404.Calendar_Date = T42433.Bill_Day_Dt and T42420.Member_Key = T42433.Empl_Key and T42428.Cust_Key = T42433.Cust_Key )
group by T42404.Calendar_Date, T42404.Per_Name_Year, T42409.Brand, T42409.Prod_Dsc, T42409.Prod_Key, T42412.Office_Dsc, T42412.Office_Key,
     T42412.Company, T42419.Employee_Key, T42428.Cust_Key, T42428.Name, T42433.Order_Status
```

```
Rows 256357, bytes 1626328808 retrieved from database query id: <<75516>>
Physical query response time 4.519 (seconds), id <<75516>>
Physical Query Summary Stats: Number of physical queries 1, Cumulative time 4.519, DB-connect time 0.000 (seconds)
Rows returned to Client 256357
Logical Query Summary Stats: Elapsed time 6.161, Total time in BI Server 4.188, Response time 1.593, Compilation time 0.027 (seconds)
```

Overcrowded Analyses

- **Recommendation**: Create several analyses with a single view and remove all the excluded columns

Rows returned to Client **-100%**

Elapsed time **-99%**

```
select sum(T42442.Units) as c1,
     sum(T42442.Revenue) as c2,
     T42406.PER_NAME_YEAR as c3
from
     BISAMPLE.SAMP_TIME_QTR_D T42406 /* D03 Time Quarter Grain */ ,
     BISAMPLE.SAMP_REVENUE_FA2 T42442 /* F21 Rev. (Aggregate 2) */
where  ( T42406.QTR_KEY = T42442.Bill_Qtr_Key )
group by T42406.PER_NAME_YEAR
```

```
Rows 3, bytes 3192 retrieved from database query id: <<140181>>
Physical query response time 0.032 (seconds), id <<140181>>
Physical Query Summary Stats: Number of physical queries 1, Cumulative time 0.032, DB-connect time 0.001 (seconds)
Rows returned to Client 3
Logical Query Summary Stats: Elapsed time 0.041, Total time in BI Server 0.041, Response time 0.041, Compilation time 0.005 (seconds)
```

Table / Pivot Prompts

- Provide an interactive result set that enables users to select the data that they want to view

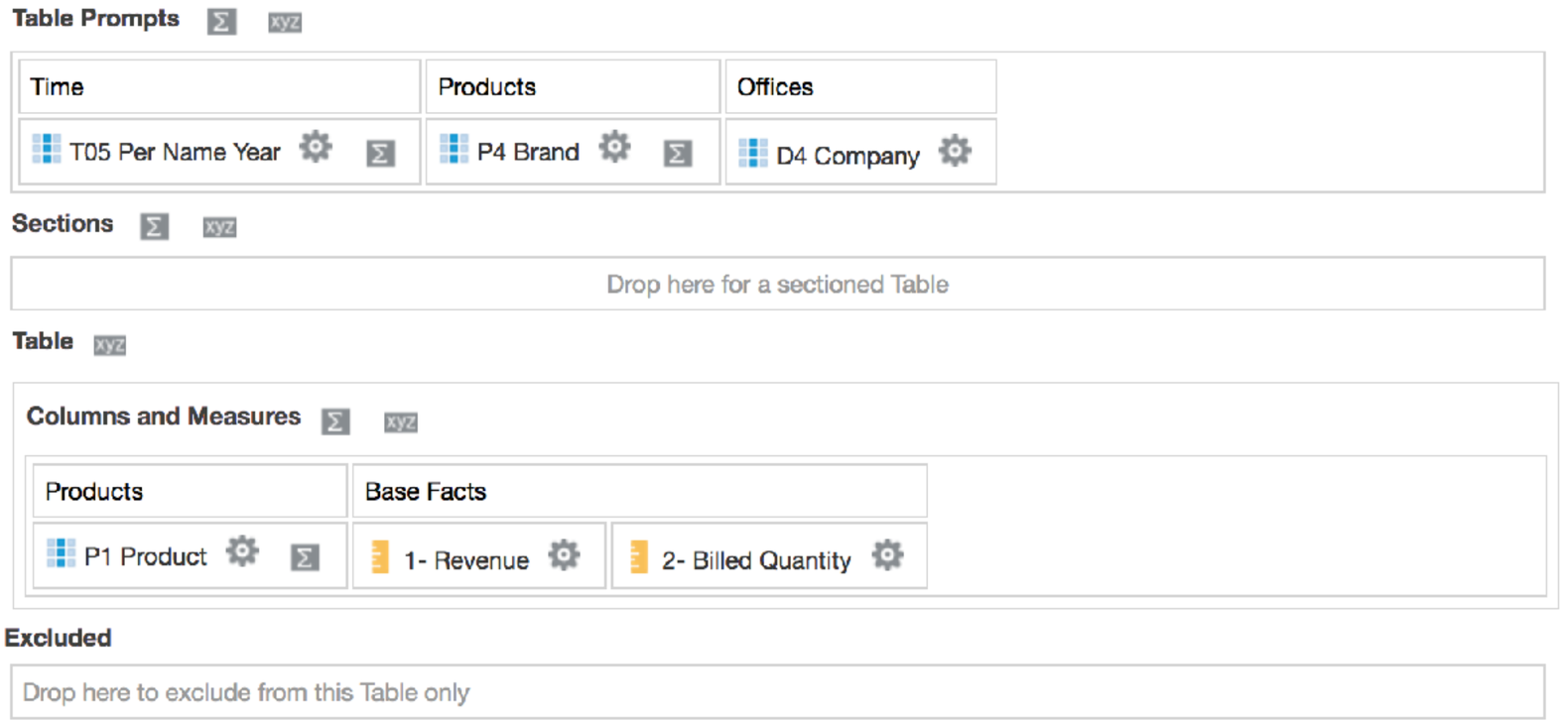


Table / Pivot Prompts

- Do **not** append any WHERE condition to the query

```
select sum(T42433.Units) as c1,
     sum(T42433.Revenue) as c2,
     T42412.Company as c3,
     T42409.Prod_Dsc as c4,
     T42409.Brand as c5,
     T42406.PER_NAME_YEAR as c6,
     T42409.Prod_Key as c7,
     T42412.Company_Key as c8
from
     BISAMPLE.SAMP_OFFICES_D T42412 /* D30 Offices */ ,
     BISAMPLE.SAMP_PRODUCTS_D T42409 /* D10 Product (Dynamic Table) */ ,
     BISAMPLE.SAMP_TIME_QTR_D T42406 /* D03 Time Quarter Grain */ ,
     BISAMPLE.SAMP_REVENUE_F T42433 /* F10 Billed Rev */
where  ( T42406.QTR_KEY = T42433.Bill_Qtr_Key and T42409.Prod_Key = T42433.Prod_Key
     and T42412.Office_Key = T42433.Office_Key )
group by T42406.PER_NAME_YEAR, T42409.Brand, T42409.Prod_Dsc, T42409.Prod_Key, T42412.Company,
     T42412.Company_Key
```

```
Rows 180, bytes 745920 retrieved from database query id: <<190416>>
Physical query response time 0.133 (seconds), id <<190416>>
Physical Query Summary Stats: Number of physical queries 1, Cumulative time 0.133, DB-connect time 0.001 (seconds)
Rows returned to Client 180
Logical Query Summary Stats: Elapsed time 0.155, Total time in BI Server 0.155, Response time 0.155, Compilation time 0.018 (seconds)
```

Table / Pivot Prompts

- **Recommendation**: Use Dashboard Prompts rather than Table / Pivot Prompts

Rows returned to Client **-96%**

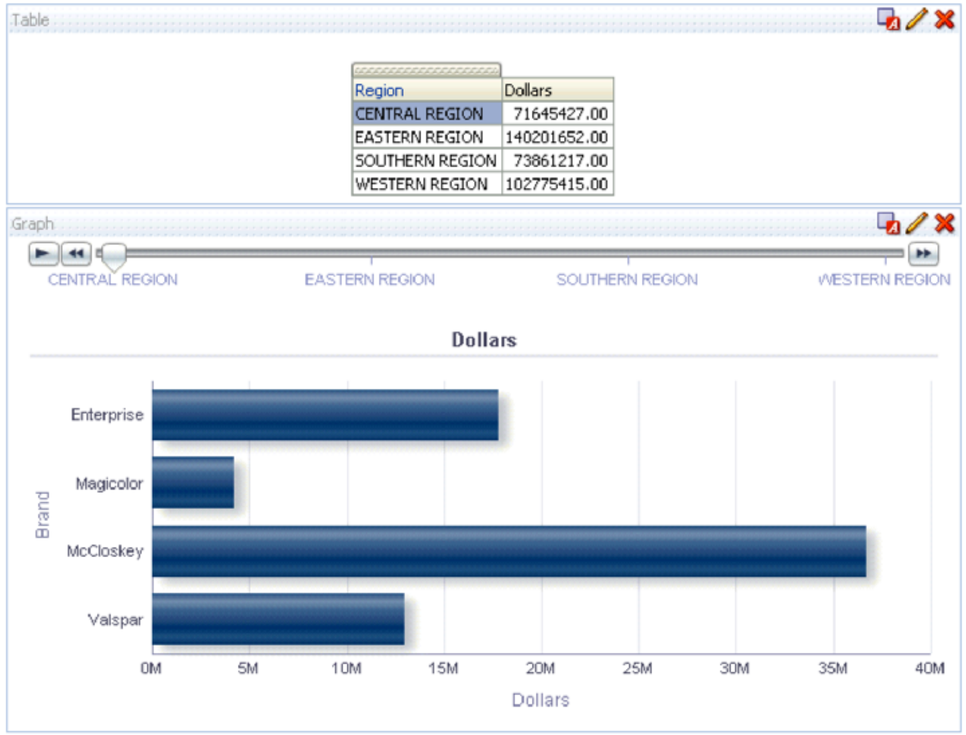
Elapsed time **-26%**

```
select sum(T42433.Units) as c1,
     sum(T42433.Revenue) as c2,
     T42409.Prod_Dsc as c3,
     T42409.Prod_Key as c4
from
     BISAMPLE.SAMP_OFFICES_D T42412 /* D30 Offices */ ,
     BISAMPLE.SAMP_PRODUCTS_D T42409 /* D10 Product (Dynamic Table) */ ,
     BISAMPLE.SAMP_TIME_QTR_D T42406 /* D03 Time Quarter Grain */ ,
     BISAMPLE.SAMP_REVENUE_F T42433 /* F10 Billed Rev */
where  ( T42406.QTR_KEY = T42433.Bill_Qtr_Key and T42409.Prod_Key = T42433.Prod_Key
     and T42406.PER_NAME_YEAR = '2010' and T42409.Brand = 'BizTech'
     and T42412.Office_Key = T42433.Office_Key and T42412.Company = 'Genmind Corp' )
group by T42409.Prod_Dsc, T42409.Prod_Key
```

```
Rows 8, bytes 8512 retrieved from database query id: <<200491>>
Physical query response time 0.091 (seconds), id <<200491>>
Physical Query Summary Stats: Number of physical queries 1, Cumulative time 0.091, DB-connect time 0.000 (seconds)
Rows returned to Client 8
Logical Query Summary Stats: Elapsed time 0.115, Total time in BI Server 0.115, Response time 0.115, Compilation time 0.018 (seconds)
```

Master-Detail Linking

- Allows to link views such that one view (master) drives changes in one or more other views (detail)
- Does **not** append any WHERE condition to the query
- **Recommendation**: Use Action Links rather than sending master-detail events



Hierarchical Columns

- Allow for encapsulating the presentation of a dimension hierarchy in an analysis within a single column
- Generated SQL can get very complex and long

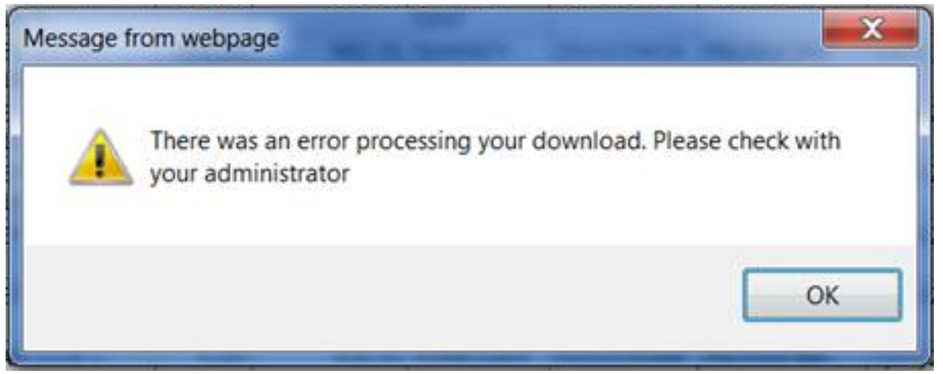
	Total Time							
		2010	2011					2012
				2011 Q1	2011 Q2	2011 Q3	2011 Q4	
Products Hierarchy	1- Revenue	1- Revenue	1- Revenue	1- Revenue	1- Revenue	1- Revenue	1- Revenue	1- Revenue
Total Value	70,000,000	23,500,000	23,000,000	3,574,988	7,308,428	7,555,530	4,561,054	23,500,000
BizTech	25,500,000	8,277,442	8,463,172	1,229,845	2,616,813	2,825,550	1,790,965	8,759,386
FunPod	22,500,000	7,235,999	7,300,894	1,065,359	2,272,985	2,350,221	1,612,328	7,963,107
Digital	6,614,105	2,491,178	2,385,484	351,770	793,661	796,074	443,979	1,737,442
Games	15,885,895	4,744,821	4,915,410	713,589	1,479,324	1,554,147	1,168,349	6,225,665
HomeView	22,000,000	7,986,559	7,235,934	1,279,784	2,418,631	2,379,759	1,157,761	6,777,507

= 211 lines of SQL

- **Recommendation**: Do not use more than one hierarchical column at a time in an analysis

OBIEE as a Data Extraction Tool

- A large number of users are using OBIEE mostly as a feed for Excel-marts..



- **Recommendation**: Talk to end users about what they're doing with the data in their destination system, and whether the same can be achieved within OBIEE

Summary

- Do not ask for dashboard requirements to end users
- Prefer performance tile, line-bar and table views
- Use action links to provide guided navigation
- Decide on the dashboard layout and be consistent
- Provide alternatives
- Automate repetitive tasks

#EOF

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