Maximizing the Data Exploration Capabilities of Power View

SQL Saturday Kalamazoo

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MVP
Microsoft Most Valuable Professional
Agenda

- Introduction to Power View
  **Demo: Features and Functionality**

- Versions, Software Requirements, and Data Sources
  **Demo: Power View in SharePoint and Excel**

- Tips on Working With Power View’s Limitations & Restrictions

- Optimizing the BI Semantic Model for Power View

- Conclusion: Getting the Most out of Power View
INTRODUCTION TO POWER VIEW
Intro to Power View

Visual & **interactive**
Self-Service BI tool

Intended for **business users**

Unique data discovery

Presentation-ready (like PPT slides)

**Silverlight**-based
(exception: Power BI)

Model Explorer & Field List similar to Excel

Goal is powerful data visualization with **minimal learning curve**
SSRS Team Vision

The Reporting Services team’s vision for Power View was to provide “an interactive data exploration and visual presentation experience for ad hoc reporting.”

The team’s objectives for Power View:

- Be **simple** for end users
- Provide **meaningful context immediately** as data is added to the display and as the user interacts with that data
- Require no more than **two clicks** to visualize the data

Where Power View Fits in MSBI Stack

BI Developers & Architects

IT Pros

Power Users & Data Analysts

Business Users

Report Designer
PerformancePoint
Visio Services

PowerPivot
Data Explorer

Power View
Excel
Report Builder

Corporate BI

Self-Service BI
Reading Mode – User Interface

- Full Screen Mode (useful for presentations)
- Pop Out (to a larger view)
- Sorting (for individual data regions in a “floatie”)
- Filter (per Table/Chart)
- Filters (for one View or “pinned” across Views or one data region)
- Storyboard Mode
- View Navigation
Edit Mode – User Interface

- **Canvas**
- **View Area** (Pages much like PowerPoint)
- **Ribbon**
- **Field List** (Very similar to Excel Pivot Tables)
- **Filters** (for one View or “pinned” across Views or one data region)
- **Field Well** (Data Selections)
Demo 1
Features & Functionality

Seasonal Sales Analysis

Top 10 Products Sold by Month

Analysis of Units Sold

Population by Location Zip Code

Seasonal Sales $ and Unit Totals
VERSIONS,
SOFTWARE REQUIREMENTS
AND
DATA SOURCES
## Versions & Software Requirements

### Power View in SharePoint
- SharePoint 2010 or 2013
- **Authoring in browser** (IE8+ or Firefox 4+)
- **Viewing in browser**
- Published in **RDLX** file format
- Requires Enterprise Edition of SharePoint
- Requires SQL Server Reporting Services 2012 *(SP1 to use all features)* in SharePoint Mode

### Power View in Excel
- Excel 2013 add-in
- **Authoring in Excel**
- **Viewing in Excel** -or- **browser**
- Published in **XLSX** file format
- **No migration path** between XLSX and RDLX formats
- Requires Office 2013 Prof. Plus

### Power View in Office 365
- One component of “**Power BI**”
- Requires Office 365
- Based on Excel 2013 *(XLSX format)*
- **Mobile apps (HTML5)** -or- **browser**
# Notable Differences in Functionality

<table>
<thead>
<tr>
<th>Power View in SharePoint</th>
<th>Power View in Excel</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>One data connection</strong> permitted per file</td>
<td><strong>Different data connections</strong> per worksheet may be used</td>
</tr>
<tr>
<td><strong>Reading Mode</strong> and <strong>Edit Mode</strong></td>
<td>Full integration with on-premises SharePoint is yet to come (ex: if XLSX is saved to PowerPivot Gallery in SharePoint, the <strong>thumbnail previews</strong> cannot render the Power View worksheets); Microsoft is following the cloud-first strategy with Power BI first</td>
</tr>
<tr>
<td><strong>Full Screen Mode</strong> for presentations</td>
<td></td>
</tr>
<tr>
<td>Multi-view <strong>pagination</strong> arrows</td>
<td></td>
</tr>
<tr>
<td>Can <strong>export to PowerPoint</strong></td>
<td></td>
</tr>
</tbody>
</table>
Data Sources Supported

<table>
<thead>
<tr>
<th>Power View for SharePoint</th>
<th>Power View for Excel</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>External Data Connection:</strong></td>
<td><strong>External Data Connection:</strong></td>
</tr>
<tr>
<td>• SSAS <strong>Tabular</strong> Model</td>
<td>• SSAS <strong>Tabular</strong> Model</td>
</tr>
<tr>
<td>• SSAS <strong>Multidimensional</strong> Model (as of SQL Server 2012 SP1 CU4) – works with limitations on .RSDS connection but not at all with .BISM connection</td>
<td>• <strong>PowerPivot</strong> Model which has been published to SharePoint OR</td>
</tr>
<tr>
<td>• <strong>PowerPivot</strong> Model which has been published to SharePoint</td>
<td><strong>Connection Embedded in Excel:</strong></td>
</tr>
</tbody>
</table>

Tabular & PowerPivot are collectively referred to as BISM: BI Semantic Model

*(RSDS or BISM connection)*
Demo 2
Power View in SharePoint

Power View in Excel
The “Less is More” simplicity has great benefits for business users & casual users, but there are tradeoffs for power users who may have exceedingly high expectations.
Themes, Fonts, and Titles

Font and theme settings have broad effect – i.e., simplicity translates into the lack of granular control of every object. *Exception: Text boxes can be formatted individually.*

Titles for charts and tables may be hidden, but may not be customized. *Workaround: hide the title and use a textbox.*

Some themes may utilize colors (such as red) that inherently have meaning but may not when used in the context of that particular theme.
Reliance on Data Model

**Cannot derive a new column** in Power View. Tables, columns & hierarchies must exist in the data model.

**Field names** suitable for reporting must be **defined in the data model** & cannot be changed on the report.

A user who can interact with or influence both the Power View report and the underlying BISM (BI Semantic model) will have the best experience.
Chart Axes

The X and Y-axis on charts are dynamic. As slicers or filters are applied, the axis may change dramatically.

Axis ranges may not match and may not always start at 0.

*Workaround:* Display of Data Labels may be helpful. Consider this a minor training issue to inform users about.
Online Connectivity Requirements

Power View requires constant connectivity to its **data source**. It has no ability to render the “last saved state” the way an Excel Pivot Table does. This inherently means that Power View reports cannot be saved as “snapshot” or historical reports.

*Workaround: export to Power Point.*

*Data source connectivity in Power Point is optional (but is required to enable interactivity within Power Point).*

Power View also requires **Internet connectivity** if using a **Map** (due to its integration with Bing Maps) or **Image URLs**.
Adding a Power View Worksheet in Excel

The Insert menu will work fine if a Power Pivot model is embedded. However…

If you are using an external data connection (ex: to a Tabular model) you’ll need to insert the Power View worksheet via the data connection itself.

Be sure to leave at least one Excel worksheet in the workbook so you don’t get “stranded” in a Power View worksheet without full menus.
## SharePoint Integration with XLSX

### Automatic Data Refresh of XLSX Files in SharePoint

If Power View worksheets are embedded in an Excel 2013 workbook, **automatic data refresh is not yet supported** in SharePoint. **Workaround:** *Power View for SharePoint (connected to data sources being refreshed).*

### Rendering of XLSX Power View Worksheets in SharePoint

Thumbnail previews not supported. Excel Services rendering does work. Bug: Download will omit the Power View worksheets so keep the original!

### File Sizes for XLSX Files with a PowerPivot Model

Excel 2013 removes the file size limit → the limit depends on the computer’s resources. This is great; however, other considerations remain:

- 2GB limit in on-premises SharePoint document library
- 250MB limit in SharePoint Online for Office 365 (10MB rendering limit)
# Filtering & Slicing Behavior

## Types of Filtering

- **View (Filter Pane)**
- **All Views (Filter Pane)** - can be "pinned" across views as of SS2012 SP1 CU4
- **Data Region/Visualization** (Filter Pane or Funnel symbol)
- **Slicer (Canvas)**

## Notable Behaviors

- Charts can behave as if they are filters; one exception to this inherent cross-filtering: hierarchies in the data region do not cross-filter other charts properly.
- No support for hierarchies in the filters. *Workaround: slicers can cascade (ex: Year>Month>Day).*
- Flexibility to filter on measures (in addition to dimensional data).
- Some filtering capabilities available in Excel are not available in Power View (such as Top 10 x); often this can be addressed with DAX formulas instead.

## Search

- Search displayed if the list of values is long (otherwise not shown)
- Wildcards: ?=single  *=multiple  ~ = escape character
- Checkboxes to select & deselect offer flexibility
## Support for Power View in Excel 2013

<table>
<thead>
<tr>
<th>Client Computer</th>
<th>SharePoint Online (Office 365)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Editable &amp; interactive</td>
<td>Interactive</td>
</tr>
<tr>
<td>SharePoint configured to render workbooks in Excel Services</td>
<td>SkyDrive</td>
</tr>
<tr>
<td>Interactive</td>
<td>Not visible</td>
</tr>
<tr>
<td>SharePoint configured to render workbooks with Office Web Apps</td>
<td></td>
</tr>
<tr>
<td>Not visible</td>
<td></td>
</tr>
</tbody>
</table>

### More info:
OPTIMIZING THE BI SEMANTIC MODEL FOR POWER VIEW
### Optimizing a Model for Power View

#### Table Properties

**In Tabular Model or PowerPivot**

<table>
<thead>
<tr>
<th><strong>Default Field Set</strong></th>
<th>The most common fields to be added to Power View table initially</th>
</tr>
</thead>
</table>

**Table Behavior**

- **Row Identifier** – How unique rows are identified; also enables images to be used in reports
- **Keep Unique Rows** – If fields shouldn’t be grouped
- **Default Label** – What field represents a row; shown in tiles
- **Default Image** – Image which represents a row of data

**Power View only; not applicable to Excel Pivot Tables**

**Relationships** - The relationships between tables are critical for interactivity to work
Optimizing a Model for Power View

<table>
<thead>
<tr>
<th>Field Properties in Tabular Model or PowerPivot</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Images</strong> - URLs paths, or embedded in model (if space &amp; memory permits)</td>
</tr>
<tr>
<td><strong>Data Category</strong> - Allows geography &amp; images to function properly</td>
</tr>
<tr>
<td><strong>Descriptions</strong> - Displayed as tooltips for fields and tables</td>
</tr>
<tr>
<td><strong>Data Type &amp; Format</strong> - Decimal, number, text data types with or without currency symbol, decimal places, etc (formats cannot be modified within Power View, although aggregation can)</td>
</tr>
<tr>
<td><strong>Sort By</strong> - If sort isn’t alphabetical (ex: sort Jan, Feb, Mar by month number not name)</td>
</tr>
<tr>
<td>Field Properties in Tabular Model or PowerPivot</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td><strong>Field Names</strong> - Friendly name to display on reports (names and column titles cannot be customized in Power View)</td>
</tr>
<tr>
<td><strong>Summarize By</strong> - Default aggregation such as Sum, Average, Count</td>
</tr>
<tr>
<td><strong>KPIs</strong> – Key Performance Indicators</td>
</tr>
<tr>
<td><strong>Calculated Fields &amp; Columns</strong> - DAX calculations can extend a model significantly! Examples include:</td>
</tr>
<tr>
<td>Derived text &amp; numeric columns</td>
</tr>
<tr>
<td>Variances amounts &amp; percentages</td>
</tr>
</tbody>
</table>
CONCLUSION
Getting the Most out of Power View

Use Power View for the things it’s best at:

**Visualization**
Ad-hoc, interactive, behavior

**Exploration**
Becoming acquainted with a new set of data

**Analyzing categories of data**
Interactivity & quick visualization changes

**Exposure of relationships**
Highlighting, cross-filtering & sorting
Getting the Most out of Power View

Use Power View for the things it’s best at:

*Uncovering patterns & trends*
Animated play axis, small multiples

*Images which increase meaningfulness of the data*
Cards & tiles
Getting the Most out of Power View

Use Power View for the things it’s best at:

- **Geographic data**
- **Zoom-able Maps**
- **Dimension-only report**

<table>
<thead>
<tr>
<th>Employee Full Name</th>
<th>Employee Primary Area</th>
<th>Employee Type</th>
<th>Employee Photo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wade Becker</td>
<td>Grounds</td>
<td>Hourly</td>
<td></td>
</tr>
<tr>
<td>Mason Samuel</td>
<td>Owner</td>
<td>Salaried</td>
<td></td>
</tr>
<tr>
<td>Addison Adams</td>
<td>Purchasing</td>
<td>Hourly</td>
<td></td>
</tr>
</tbody>
</table>
Getting the Most out of Power View

Use Power View for the things it’s best at:

**Business-driven reports & prototyping**
Use the domain knowledge to get a head start on reporting projects

**Sharing Data During Meetings**
Slide Show Format including interaction when exported to Power Point
Getting the Most out of Power View

“Managed” Self-Service BI (Top Down)

- Power View Report
- SSAS Tabular Data Model

“Unstructured” Self-Service BI (Bottom Up)

- Power View Report
- PowerPivot Data Model

- An understanding of the BISM model and report = most flexibility
- Optimize the model for Power View
- Understanding of DAX extend capabilities of Power View

Users with control (or input) over both model & report may have the best experience
Thanks for attending!

Slides at sqlchick.com
(Presentations & Downloads page)

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