Best Practices for Delivering & Sharing Content in Power BI

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Agenda & Flow of this Presentation

Discuss & demonstrate ideas and techniques for collaboration, sharing, and distribution of Power BI content in the Power BI Service. Will discuss in the order in which users typically discover capabilities:

My Workspace → Sharing → App Workspace → App

Additional Power BI delivery options which are out of scope for this talk:

• Power BI Premium
• Power BI Report Server
• Embedded solutions
• Power BI dataflows
Sharing, Collaboration, Distribution in the Power BI Service

- **Content & Data**
  - Dashboards, reports, datasets

- **My Workspace**
  - Personal BI

- **App Workspace**
  - Team collaboration & small team distribution

- **App**
  - Large team / broad content distribution

- **Sharing**
  - Distribution of individual pieces of content
**Terminology**

**Sharing**
An actual feature in the Power BI Service in which a one report or one dashboard may be viewed by another user or group.

**Distribution**
The delivery of content in the Power BI Service.

**Collaboration**
Multiple people working together, such as a data modeler, report designer, and quality assurance.
More Details Available in Whitepaper

Many of the diagrams & concepts we’ll discuss today are contained in the “Planning a Power BI Enterprise Deployment” whitepaper, which was coauthored with Chris Webb.

Available from:
https://docs.microsoft.com/en-us/power-bi/whitepapers
My Workspace

A personal area in the Power BI Service dedicated to each Power BI user.
My Workspace: Personal BI

Power BI Desktop
- Queries
- Data
- Reports

Excel
- Publish .xlsx file

Power BI Service
- My Workspace
  - Dashboards
  - Alerts
  - Reports
  - Print, Export, Download
  - Workbooks
  - Datasets

Source Data
- Queries and data mashups

Data modeler/report designer

App Source

On-Premises Data Gateway (Personal)
- Scheduled data refresh for on-premises data sources

Power BI Mobile App

Paint

Cloud

App

App

Table

Table

Excel

Excel

Excel
Where to Locate Mission-Critical Content

**Best Practice**

Don’t store content which is critical to the company in My Workspace.

Great uses for My Workspace: proof of concept, personal items, or temporary analysis.

**Why?**

Only one owner can manage content in My Workspace. What happens when this person is on vacation, transfers departments, or leaves the company?
File Storage Outside of the Power BI Service

Best Practice

Use a location which is backed up and has versioning built in for:
✓ Original PBIX files prior to publishing to the Power BI Service
✓ Flat files with source data (ex: xlsx, csv, txt)
✓ Content which has been exported from the Power BI Service

OneDrive for Business or SharePoint typically works well.
It also uses a common path for source files (avoiding c:\users\...)
Sharing

The act of granting read-only access to individual reports & dashboards to others. Also the name of an actual feature.
Sharing in the Power BI Service

Source Data
- Azure
- APIs

Power BI Desktop
- Queries
- Data
- Reports

Power BI Service
- App Workspace
- Dashboards
- Reports
- Datasets

Data modeler/report designer

Recipient of the share

Publish .pbix file

Share dashboard &/or report
When to Use Sharing

**Best Practice**
Sharing is best suited to **informal scenarios** where content is shared with **just a few people** who work closely together.

**Why?**
Sharing is specified *per report, per dashboard*. This is tedious to maintain, and error-prone.
Sharing from My Workspace

Best Practice

Use sharing from My Workspace *very* sparingly. Since sharing is so prominently displayed in the Power BI Service, new users often over-utilize sharing functionality.

Why?

Only the owner of My Workspace can manage, edit, and share the content. If this person changes jobs, the content could be lost and/or recipients experience a disruption in content availability.
Sharing from App Workspace

Best Practice

Use sharing from App Workspace only when you:
• Want to allow read-only access to one piece of content
• Do *not* want recipient to see everything in the workspace
• Do *not* want recipient to see everything in the App
Sharing and Re-Sharing

FYI There is **no licensing validation** done at the time of sharing. To view the content, the recipient will be prompted to start a trial if they don’t have a Pro license.

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**Best Practice**

The ability to **re-share is enabled by default**. More often than not, you want to de-select this option.
No ‘Sharing’ from Power BI Desktop

FYI

Although the label on the ribbon says ‘Share’ it has nothing to do with the Sharing feature.
Immediate Visibility to Changes

**Best Practice**
Be cautious & purposeful when making changes to reports, dashboards, and datasets.

**Why?**
All changes are visible immediately to recipients of a share.
Sharing Permissions

V1 = My workspace or existing app workspace
New = New workspace experience in preview

- Individual (within organization or outside of or using B2B)
- Distribution list
- Security group
- Mail-enabled security group
- Office 365 group (aka modern group)
Tenant Settings with Affect Sharing

Best Practice

Depending on the levels of data sensitivity and compliance, consider restricting the ability to share content outside the organization.

Export and sharing settings

- Share content with external users
  
  Enabled for a subset of the organization

  Users in the organization can share dashboards and reports with users outside the organization.

  - Enabled

  Apply to:
  - The entire organization
  - Specific security groups

  Power BI High Privilege Guest User Sharing

  Enter security groups

  Except specific security groups

  Only users who meet the criteria can share content externally. (All content previously shared with external users will remain shared.)

  Apply

  Cancel
App Workspace

In the Power BI Service, *collaboration* among multiple persons creating and testing content occurs in an App Workspace.
App Workspace for Team Collaboration

Viewer role not available yet for the new workspace experience
Workspace Purpose

**Primary workspace purpose:**
**Collaboration** on content (datasets, reports, dashboards)

**Secondary workspace purpose:**
**Distribution** of content for a small team of coworkers
<table>
<thead>
<tr>
<th>V1 Workspace</th>
<th>New “Modern” Workspace Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requires Office 365 group</td>
<td>Decoupled from Office 365 groups</td>
</tr>
<tr>
<td>Only individuals can be assigned for security</td>
<td>More flexible security group assignments</td>
</tr>
<tr>
<td>All members can edit or view (not by individual person)</td>
<td>More granular edit/view permissions (by individual)</td>
</tr>
<tr>
<td></td>
<td>Many new features are coming only here</td>
</tr>
</tbody>
</table>
Workspace Naming

Best Practice Use a **descriptive name** that represents the **purpose for the reports**.

FYI Now that we can customize the name of an App, we have more flexibility with naming of workspaces. (The App used to inherit the same name as the workspace.)
Workspace Purpose & Scope

Best Practice

Workspace scope shouldn’t be too narrow, nor too broad.

<table>
<thead>
<tr>
<th>Scope:</th>
<th>Per Department or Team</th>
<th>Per Individual Report</th>
<th>Per Project, Type of Analysis, or Subject Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example:</td>
<td>Finance reports</td>
<td>Sales summary report</td>
<td>Quarter-end reports, or Product launch reports</td>
</tr>
<tr>
<td>Use of the Workspace:</td>
<td>Very broad (a large # of reports)</td>
<td>Extremely narrow (very few reports)</td>
<td>Medium (a manageable # of reports)</td>
</tr>
</tbody>
</table>

Why?

Think of a workspace in terms of:

✓ logical grouping of related content
✓ security boundary

Until we have folders in workspaces -- when in doubt, make scope more narrow than broad.
Separating Dataset from Reports

**Best Practice**

Since the skills for dataset creation (relationships, data modeling, DAX calculations) differs from report development skills, it can be beneficial to **separate out the dataset from the reports**.

Create using “Live Connection” to a Power BI Dataset (when creating content in Power BI Desktop)

**Why?**

This can facilitate better **collaboration** when the roles are performed by **different people**, plus **dataset reuse**.
Managing Permissions

Best Practice **Minimize** the # of people who can **edit content**.

Why?

Providing too many people edit abilities introduces risk that the content will be modified in an unapproved way, or outside the normal change management process.
# New Workspace Experience: Permissions

<table>
<thead>
<tr>
<th>Permission</th>
<th>Admin</th>
<th>Member</th>
<th>Contributor</th>
<th>Viewer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edit/delete workspace</td>
<td>✅</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Add members</td>
<td>✅</td>
<td>✅</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Share</td>
<td>✅</td>
<td>✅</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Publish/update apps</td>
<td>✅</td>
<td>✅</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Add/edit/delete content</td>
<td>✅</td>
<td>✅</td>
<td>✅</td>
<td>✅</td>
</tr>
<tr>
<td>View content</td>
<td>✅</td>
<td>✅</td>
<td>✅</td>
<td>✅</td>
</tr>
</tbody>
</table>

- **Primary Purpose:** Collaboration on content
- **Secondary Purpose:** Small team distribution
New Workspace Experience: Access

V1 New

- ✔ ✔ Individual (within organization or outside of or using B2B)
- ✗ ✔ Distribution list
- ✗ ✔ Security group
- ✗ ✔ Mail-enabled security group
- ✔ ✔ Office 365 group (aka modern group)
Managing the Publishing Process

Best Practice
Create a **standard practice** for editing & publishing content from Power BI Desktop and the Power BI Service.

Routinely download the `.pbix` from the Power BI Service before editing if there’s a chance the content changed.

Caution! If the report was created in the web, the dataset will come with it and will be duplicated.
**Viewer role** (read-only access to workspace content) is not available yet.

**Folders** for organizing content within a workspace. Currently, workspaces are “flat” structures.

**Automatic upgrade** of a V1 workspace to V2/new experience is not available yet.

Public roadmap:
Roadmap for Workspaces (2/3)

Related content is currently constrained to one workspace. That’s about to change with **Shared & Certified Datasets**:

- Reuse of a dataset that already exists
- Reuse a dataset across multiple workspaces
- Promoting a dataset for discovery
- Certifying a dataset

Public roadmap:
Dataset Discovery will help users find shared datasets:

Select a dataset to create a report

<table>
<thead>
<tr>
<th>Name</th>
<th>ENDORSEMENT</th>
<th>Owner</th>
<th>Workspace/App</th>
<th>Refreshed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retail Analysis</td>
<td>Certified</td>
<td>Steve Myer</td>
<td>Retail</td>
<td>4 days ago</td>
</tr>
<tr>
<td>Customer Profitability</td>
<td>Certified</td>
<td>Susan Mailer</td>
<td>Customer</td>
<td>6/23/17</td>
</tr>
<tr>
<td>Ventiage Global</td>
<td>Promoted</td>
<td>Lane Barnes</td>
<td>Ventiage</td>
<td>3/3/18</td>
</tr>
<tr>
<td>IT Spend Analytics</td>
<td>Promoted</td>
<td>Ari Gold</td>
<td>IT</td>
<td>5 hours ago</td>
</tr>
<tr>
<td>Team Analytics</td>
<td>Promoted</td>
<td>Ana Smith</td>
<td>Analytics</td>
<td>7/12/18</td>
</tr>
<tr>
<td>Opportunity Analysis</td>
<td>Promoted</td>
<td>Lane Barnes</td>
<td>My Workspace</td>
<td>6/12/17</td>
</tr>
<tr>
<td>Retail</td>
<td></td>
<td>Lane Barnes</td>
<td>My Workspace</td>
<td>2 days ago</td>
</tr>
<tr>
<td>Procurement Analysis</td>
<td></td>
<td>Lane Barnes</td>
<td>My Workspace</td>
<td>7/22/18</td>
</tr>
<tr>
<td>Sales</td>
<td></td>
<td>Lane Barnes</td>
<td>My Workspace</td>
<td>1/24/17</td>
</tr>
</tbody>
</table>

Tenant Settings Which Affect Workspaces

Best Practice
In large companies, consider limiting who can create workspaces to authors who have been trained in workspace management.

There will also be a new tenant setting soon re: who can create reports on shared datasets.
When to Use a Workspace vs. an App?

**Small teams**

Using a workspace for **collaboration + distribution** works pretty well for **small teams**. This simplifies things for small teams when an App isn’t needed.

**Large teams**

At some point, using an **App** begins to make more sense for broad **distribution** of content, especially if there are consumers you don’t work closely with.
App

A more ‘formal’ method of broad content distribution to many users.
Apps for Content Distribution

Power BI Desktop
- Queries
- Data
- Reports

Power BI Service
- App Workspace
  - Dashboards
  - Reports
  - Workbooks
  - Datasets
- Gateway Data Source Settings

Excel
- Analyze in Excel

Power BI Mobile App
- View-only users

Source Data
- App Source
- Source Data
- On-Premises Data Gateway (Enterprise)
- Queries and data mashups

Data modeler/report designer
- Workspace admins & members collaborating on content
- Publish app file

Scheduled data refresh for on-premises data sources or DirectQuery
Simplifying Permissions Management

Best Practice

Use **Apps for delivery of read-only content** more frequently than Sharing – especially when there are several pieces of related content.

Why?

Managing the content that gets published in an App is much easier than with sharing.
Handling Permissions in Large Environments

Best Practice

Limit access to the workspace to those who are handling:
✓ Authoring
✓ Development
✓ Testing

Provide access via the app only to:
✓ Read-only users
Managing Content Changes

Dataset changes *always take effect immediately* whereas report & dashboard changes require republishing of the App for users to see them.

Immediate changes include:
- Data refresh
- Calculation changes
- Relationship changes
- Data model edits
Push Apps is disabled by default because overzealous app publishers could diminish user experience if too much content “just shows up.”

Best Practice
Consider enabling selective groups of authors for pushing. It does offer a convenience for the recipient if not overused.
In large organizations, the ability to publish apps to the entire organization should typically be restricted to certain groups of people.
Wrap-Up
Sharing, Collaboration, Distribution in the Power BI Service

- **Content & Data**
  - Dashboards, reports, datasets

- **My Workspace**
  - Personal BI

- **App Workspace**
  - Team collaboration & small team distribution

- **App**
  - Large team / broad content distribution

- **Sharing**
  - Distribution of individual pieces of content
Appendix

The remainder of this presentation includes information we didn’t have time to cover, but may be of interest.
Options for Handling Multiple Dev, Test, and Prod Environments
Option 2

Power BI Desktop

Data modeler/report designer

Workspace admins & members collaborating on content

Power BI Service

App Workspace

Development

App Workspace

Test

App

Test

App Workspace

Production

App

Production

Users involved with QA and User Acceptance Testing

View-only users

Publish .pbix file to Dev

Publish .pbix file to Test

Publish .pbix file to Prod

Publish app
Power BI Premium

Dedicated resources in the Power BI Service to address workload demands of larger enterprise deployments.
When to Use Premium Capacity

- Read-only free users
- Dedicated hardware
- Larger storage volumes
- Larger dataset sizes
- Higher refresh rates
- Incremental data refresh
- RDL report integration
- Power BI Report Server
- Data storage in specific geo
- XMLA endpoint available
Power BI Report Server

On-premises deployment of Power BI.
When to Use Power BI Report Server

On-premises deployment

Significant investment in Reporting Services

Desire a slower release cadence for new features
Embedded Solutions

Set of REST APIs for delivering content embedded in a custom application, SharePoint Online, Teams, or third party applications.
When to Use Option 1: Organizational Embedding

Usage of Power BI REST APIs to integrate visuals in a custom app.

Power BI handles user authorization (via Premium which is depicted, or all Pro licenses).
When to Use Option 2: Power BI Embedded (Azure Service)

Usage of Power BI REST APIs to integrate visuals in a custom app. App handles all user authorization.
Other Content Delivery Options

Additional options to consider and/or design for
Subscriptions

Best for:
• Point-in-time snapshot
• Interactivity not needed
• User prefers report delivery on a schedule

Try not to over-use subscriptions.

Verify **data security** is not at risk by distributing PDFs via e-mail.
Publish to Web

Best for:
- Public data
- Embedding code in a iFrame

Because of the security risks: **disable the Publish to Web capability in the tenant settings. Enable selectively only. This feature can be utilized by Power BI Free users.**

Regularly **verify the embed codes** in the Admin Portal.
Power BI Service Live Connection

Best Practice
Educate users about this option in order to:
- Reuse existing dataset which improves consistency
- Reduce the # of redundant datasets
- Reduce the # of datasets that need to be refreshed
Analyze in Excel

Teach users about this option to:
• Reuse existing dataset, and
• Use familiar Excel environment

Best Practice

Currently limited to using via the Excel client only – cannot republish back to the Power BI Service
Do **not** use this tool anymore – it’s not supported in the new workspace experience.

Tables and charts pinned from Excel are snapshots. The visuals can be refreshed from the ‘Pin Manager’ in the Excel file.
Power BI Mobile Apps

**Best Practice** Set the phone layout to improve user experience.

The Mobile App for Windows 10 is optimized for tablets.