# Power BI adoption roadmap

**Microsoft**

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<https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-overview>

The goal of this series of articles is to provide a roadmap. The roadmap presents a series of strategic and tactical considerations and action items that directly lead to successful Power BI adoption, and help build a data culture in your organization.

Advancing adoption and cultivating a data culture is about more than implementing technology features. Technology can assist an organization in making the greatest impact, but a healthy data culture involves a lot of considerations across the spectrum of people, processes, and technology.

This series of articles correlates with the following Power BI adoption roadmap diagram:

**1. Data culture:** Data culture refers to a set of behaviors and norms in the organization that encourages a data-driven culture. Building a data culture is closely related to adopting Power BI, and it is often a key aspect of an organization's digital transformation.

**2. Executive sponsor:** An executive sponsor is someone with credibility, influence, and authority throughout the organization. They advocate for building a data culture and adopting Power BI.

**3. Content ownership and management:** There are three primary strategies for how business intelligence (BI) content is owned and managed: business-led self-service BI, managed self-service BI, and enterprise BI. These strategies have a significant influence on adoption, governance, and the Center of Excellence (COE) operating model.

**4. Content delivery scope:** There are four primary strategies for content delivery including personal BI, team BI, departmental BI, and enterprise BI. These strategies have a significant influence on adoption, governance, and the COE operating model.

**5. Center of Excellence:** A Power BI COE is an internal team of technical and business experts. These experts actively assist others who are working with data within the organization. The COE forms the nucleus of the broader community to advance adoption goals that are aligned with the data culture vision.

**6. Governance:** Data governance is a set of policies and procedures that define the ways in which an organization wants data to be used. When adopting Power BI, the goal of governance is to empower the internal user community to the greatest extent possible, while adhering to industry, governmental, and contractual requirements and regulations.
**7. Mentoring and user enablement:** A critical objective for adoption efforts is to enable users to accomplish as much as they can within the guardrails established by governance guidelines and policies. The act of mentoring users is one of the most important responsibilities of the COE. It has a direct influence on adoption efforts.

**8. Community of practice:** A community of practice comprises a group of people with a common interest, who interact with and help each other on a voluntary basis. An active community is an indicator of a healthy data culture. It can significantly advance adoption efforts.

**9. User support:** User support includes both informally organized, and formally organized, methods of resolving issues and answering questions. Both formal and informal support methods are critical for adoption.

**10. System oversight:** System oversight includes the day-to-day administration responsibilities to support the internal processes, tools, and people.

The relationships in the diagram shown above can be summarized in the following bullet list:

* Your organizational **data culture** vision will strongly influence the strategies that you follow for self-service and enterprise **content ownership and management** and **content delivery scope**.
* These strategies will, in turn, have a big impact on the operating model for your **Center of Excellence** and governance decisions.
* The established **governance** guidelines, policies, and processes affect the implementation methods used for **mentoring and enablement**, the **community of practice**, and **user support**.
* Governance decisions will dictate the day-to-day **system oversight** (administration) activities.
* All data culture and adoption-related decisions and actions are accomplished more easily with guidance and leadership from an **executive sponsor**.

Each individual article in this series discusses key topics associated with the items in the diagram. Considerations and potential action items are provided. Each article concludes with a set of [maturity levels](https://docs.microsoft.com/en-nz/power-bi/guidance/powerbi-adoption-roadmap-maturity-levels) to help you assess your current state so you can decide what action to take next.

## Power BI adoption

Successful Power BI adoption involves making effective processes, support, tools, and data available and integrated into regular ongoing patterns of usage for content creators, consumers, and stakeholders in the organization.

**Important**This series of adoption articles is focused on *organizational* adoption. See the [**Power BI adoption maturity levels article**](https://docs.microsoft.com/en-nz/power-bi/guidance/powerbi-adoption-roadmap-maturity-levels) for an introduction to the three types of adoption: organizational, user, and solution.

A common misconception is that adoption relates primarily to usage or the number of users. There's no question that usage statistics are an important factor. However, usage is not the only factor. Adoption is not just about *using* the technology on a regular basis; it's about using it *effectively*. Effectiveness is much harder to define and measure.

Whenever possible, adoption efforts should be aligned across analytics platforms, BI services, and other Power Platform products. These products include Power Apps and Power Automate.

**Note**Individuals—and the organization itself—are continually learning, changing, and improving. That means there's no formal end to adoption-related efforts.

The remaining articles in this Power BI adoption series discuss the following aspects of adoption:

* [Adoption maturity levels](https://docs.microsoft.com/en-nz/power-bi/guidance/powerbi-adoption-roadmap-maturity-levels)
* [Data culture](https://docs.microsoft.com/en-nz/power-bi/guidance/powerbi-adoption-roadmap-data-culture)
* [Executive sponsorship](https://docs.microsoft.com/en-nz/power-bi/guidance/powerbi-adoption-roadmap-executive-sponsorship)
* [Content ownership and management](https://docs.microsoft.com/en-nz/power-bi/guidance/powerbi-adoption-roadmap-content-ownership-and-management)
* [Content delivery scope](https://docs.microsoft.com/en-nz/power-bi/guidance/powerbi-adoption-roadmap-content-delivery-scope)
* [Center of Excellence](https://docs.microsoft.com/en-nz/power-bi/guidance/powerbi-adoption-roadmap-center-of-excellence)
* [Governance](https://docs.microsoft.com/en-nz/power-bi/guidance/powerbi-adoption-roadmap-governance)
* [Mentoring and enablement](https://docs.microsoft.com/en-nz/power-bi/guidance/powerbi-adoption-roadmap-mentoring-and-user-enablement)
* [Community of practice](https://docs.microsoft.com/en-nz/power-bi/guidance/powerbi-adoption-roadmap-community-of-practice)
* [User support](https://docs.microsoft.com/en-nz/power-bi/guidance/powerbi-adoption-roadmap-user-support)
* [System oversight](https://docs.microsoft.com/en-nz/power-bi/guidance/powerbi-adoption-roadmap-system-oversight)
* [Conclusion and additional resources](https://docs.microsoft.com/en-nz/power-bi/guidance/powerbi-adoption-roadmap-conclusion)

**Important**You may be wondering how this Power BI adoption roadmap is different from the [**Power BI adoption framework**](https://github.com/pbiaf/powerbiadoption). The adoption framework was created primarily to support Microsoft partners. It is a lightweight set of resources to help partners deploy Power BI solutions for their customers.

This Power BI adoption series is more current. It is intended to guide any person or organization that is using—or considering using—Power BI. If you're seeking to improve your existing Power BI implementation, or planning a new Power BI implementation, this adoption roadmap is a great place to start. You will find a lot of valuable information in the [**Power BI adoption framework**](https://github.com/pbiaf/powerbiadoption), so we encourage you to review it.

## Target audience

The intended audience of this series of articles is interested in one or more of the following outcomes:

* Improving their organization's ability to effectively use Power BI.
* Increasing their organization's maturity level related to Power BI delivery.
* Understanding and overcoming adoption-related challenges faced when scaling Power BI.
* Increasing their organization's return on investment (ROI) in data and analytics.

Primarily, this series of articles will be helpful to those who work in an organization with one or more of the following characteristics:

* Power BI is deployed with some successes.
* Power BI has pockets of viral adoption, but is not purposefully governed across the entire organization.
* Power BI is deployed with some meaningful scale, but there remains a need to determine:
	+ What is effective and what should be maintained.
	+ What should be improved.
	+ How future deployments could be more strategic.
* An expanded implementation of Power BI is under consideration or is planned.

Secondarily, this series of articles will be helpful for:

* Organizations that are in the early stages of a Power BI implementation.
* Organizations that have had success with adoption and now want to evaluate their current maturity level.

## Assumptions and scope

The primary focus of this series of articles is on the Power BI technology platform, with an emphasis on the Power BI service.

To fully benefit from the information provided in these articles, it is an advantage to have at least an understanding of [Power BI fundamental concepts](https://docs.microsoft.com/en-nz/power-bi/fundamentals/power-bi-overview).

# Maturity levels

**Note**This article forms part of the Power BI adoption roadmap series of articles. For an overview of the series, see [**Power BI adoption roadmap**](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-overview).

There are three inter-related perspectives to consider when adopting a technology like Power BI.



The three types of adoption shown in the above diagram include:

* 1. Organizational adoption: Organizational adoption refers to the effectiveness of Power BI governance. It also refers to data management practices that support and enable business intelligence efforts.
	2. User adoption: User adoption is the extent to which consumers and creators continually increase their knowledge. It is concerned with whether they are actively using Power BI, and whether they are using it in the most effective way.
	3. Solution adoption: Solution adoption refers to the impact and business value achieved for individual requirements and artifacts.

As the four arrows in the previous diagram indicate, the three types of adoption are all strongly inter-related:

* **Solution adoption affects user adoption.** A well-designed and well-managed solution—which could be many things, such as a set of reports, an app, or a dataset—impacts and guides users on how to use Power BI in an optimal way.
* **User adoption impacts organizational adoption.** The patterns and practices used by individual users influence organizational adoption decisions, policies, and practices.
* **Organizational adoption influences user adoption.** Effective organizational practices—including mentoring, training, support, and community—encourage users to do the right thing in their day-to-day workflow.
* **User adoption affects solution adoption.** Stronger user adoption, because of the effective use of Power BI by educated and informed users, contributes to stronger and more successful individual solutions.

The remainder of this article introduces the three types of Power BI adoption in more detail.

## Organizational adoption maturity levels

Organizational adoption measures the state of Power BI governance and data management practices. There are several organizational adoption goals:

* Effectively support the community.
* Enable and empower users.
* Oversee information delivery via enterprise BI and self-service BI with continuous improvement cycles.

It is helpful to think about organizational adoption from the perspective of a maturity model. For consistency with the [Power CAT adoption maturity model](https://powerapps.microsoft.com/blog/power-cat-adoption-maturity-model-repeatable-patterns-for-successful-power-platform-adoption/) and the [maturity model for Microsoft 365](https://docs.microsoft.com/en-us/microsoft-365/community/microsoft365-maturity-model--intro), this Power BI adoption roadmap aligns with the five levels from the [Capability Maturity Model](https://en.wikipedia.org/wiki/Capability_Maturity_Model), which were later enhanced by the [Data Management Maturity (DMM) model from ISACA](https://cmmiinstitute.com/data-management-maturity) (note the DMM is a paid resource).

Every organization has limited time, funding, and people. So, it requires them to be selective about where they prioritize their efforts. To get the most from your investment in Power BI, seek to attain at least maturity level 300 or 400, as discussed below. It's common that different business units in the organization evolve and mature at different rates, so be cognizant of the organizational state as well as progress for key business units.

**Note**Organizational adoption maturity is a long journey. It takes time, effort, and planning to progress to the higher levels.

### Maturity level 100 – Initial

Level 100 is referred to as initial or performed. It is the starting point for new data-related investments that are new, undocumented, and without any process discipline.

Common characteristics of maturity level 100 include:

* Pockets of success and experimentation with Power BI exist in one or more areas of the organization.
* Achieving quick wins has been a priority, and it has delivered some successes.
* Organic growth has led to the lack of a coordinated strategy or governance approach.
* Practices are undocumented, with significant reliance on tribal knowledge.
* There are few formal processes in place for effective data management.
* Risk exists due to a lack of awareness of how data is used throughout the organization.
* The potential for a strategic investment with Power BI is acknowledged, but there is no clear path forward for purposeful, organization-wide execution.

### Maturity level 200 – Repeatable

Level 200 is referred to as repeatable or managed. At this point on the maturity curve, data management is planned and executed. Data management is based on defined processes, though these processes may not apply uniformly throughout the organization.

Common characteristics of maturity level 200 include:

* Certain Power BI content is now critical in importance and/or it is broadly used by the organization.
* There are attempts to document and define repeatable practices, however efforts are siloed, reactive, and deliver varying levels of success.
* There is an over-reliance on individuals having good judgment and adopting healthy habits that they learned on their own.
* Power BI adoptions continues to grow organically and produces value, however it takes place in an uncontrolled way.
* Resources for an internal community are established, such as a Teams channel or Yammer group.
* Initial planning for a consistent Power BI governance strategy is underway.
* There is recognition that a Power BI Center of Excellence (COE) can deliver value.

### Maturity level 300 – Defined

Level 300 is referred to as defined. At this point on the maturity curve, a set of standardized data management processes are established and consistently applied across organizational boundaries.

Common characteristics of maturity level 300 include:

* Measurable success is achieved for the effective use of Power BI.
* Progress is made on the standardization of repeatable practices, though less-than-optimal aspects may still exist due to early uncontrolled growth.
* The Power BI COE is established, and it has clear goals and scopes of responsibilities.
* The internal community gains traction with the participation of a growing number of users.
* Power BI champions emerge in the community.
* Initial investments in training, documentation, and resources are made.
* An initial governance model is in place.
* Power BI has an active and engaged executive sponsor.
* Roles and responsibilities for all Power BI stakeholders are well understood.

### Maturity level 400 – Capable

Level 400 is known as capable or measured. At this point on the maturity curve, data is well-managed across its entire lifecycle.

Common characteristics of maturity level 400 include:

* Business intelligence efforts deliver significant value.
* Power BI is commonly used for delivering critical content throughout the organization.
* There is an established and accepted governance model with cooperation from all key business units.
* Training, documentation, and resources are readily available for, and actively used by, the Power BI community of users.
* Standardized processes are in place for the oversight and monitoring of Power BI usage and practices.
* The Power BI COE includes representation from all key business units.
* A Power BI champions network supports the internal community: champions actively work with their colleagues and the COE.

### Maturity level 500 – Efficient

Level 500 is known as efficient or optimizing because at this point on the maturity curve, the emphasis is now on automation and continuous improvement.

Common characteristics of maturity level 500 include:

* The value of Power BI solutions is prevalent in the organization, and Power BI is widely accepted throughout the organization.
* Power BI skillsets are highly valued in the organization, and they are recognized by leadership.
* The internal Power BI community is self-sustaining, with support from the COE. The community is not over-reliant on key individuals.
* The COE reviews key performance indicators regularly to measure success of implementation and adoption goals.
* Continuous improvement is a continual priority.
* Use of automation adds value, improves productivity, or reduces risk for error.

**Note**The above characteristics are generalized. When considering maturity levels and designing a plan, you'll want to consider each topic or goal independently. In reality, it's probably not possible to reach level 500 maturity level for every aspect of Power BI adoption for the entire organization. So, assess maturity levels independently per goal. That way, you can prioritize your efforts where they will deliver the most value. The remainder of the articles in this Power BI adoption series present maturity levels on a per-topic basis.

Individuals—and the organization itself—continually learn, change, and improve. So, that means there's no formal end to adoption-related efforts. However, it is common that effort is reduced as higher maturity levels are reached.

The remainder of this article introduces the second and third types of adoption: [user adoption](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-maturity-levels#user-adoption-stages) and [solution adoption](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-maturity-levels#solution-adoption-phases).

**Note**The remaining articles in this series focus primarily on organizational adoption.

## User adoption stages

User adoption measures the extent to which content consumers and self-service content creators are actively using Power BI effectively. Usage statistics alone do not indicate user adoption. User adoption is also concerned with individual user behaviors and practices. The aim is to ensure users engage with Power BI in the correct way and to its fullest extent.

User adoption encompasses how consumers view content, as well as how self-service creators generate content for others to consume.

User adoption occurs on an individual user basis, but it's measured and analyzed in the aggregate. Individual users progress through the four stages of user adoption at their own pace. An individual who adopts a new technology will take some time to achieve proficiency. Some users will be eager; others will be reluctant to learn yet another tool, regardless of the promised productivity improvements. Advancing through the user adoption stages involves time and effort, and it involves behavioral changes to become aligned with organizational adoption objectives. The extent to which the organization supports users advancing through the user adoption stages has a direct correlation to the organizational-level adoption maturity.

### User adoption stage 1 – Awareness

Common characteristics of stage 1 user adoption include:

* An individual has heard of, or been initially exposed to, Power BI in some way.
* An individual may have access to Power BI but is not yet actively using it.

### User adoption stage 2 – Understanding

Common characteristics of stage 2 user adoption include:

* An individual develops understanding of the benefits of Power BI to deliver analytical value and support decision-making.
* An individual shows interest and starts to use Power BI.

### User adoption stage 3 – Momentum

Common characteristics of stage 3 user adoption include:

* An individual actively gains Power BI skills by attending formal training, self-directed learning, or experimentation.
* An individual gains basic competency with the aspects of Power BI relevant to their role.

### User adoption stage 4 – Proficiency

Common characteristics of stage 4 user adoption include:

* An individual actively uses Power BI on a regular basis.
* An individual understands how to use Power BI in the way in which it was intended, as relevant for their role.
* An individual modifies their behavior and activities to align with organizational governance processes.
* An individual's willingness to support organizational processes and change efforts is growing over time, and they become an advocate for Power BI in the organization.
* An individual makes the effort to continually improve their skills and stay current with new product capabilities and features.

It's easy to underestimate the effort it takes to progress from stage 2 (understanding) to stage 4 (proficiency). Typically, it takes the longest time to progress from stage 3 (momentum) to stage 4 (proficiency).

**Important**By the time a user reaches the momentum and proficiency stages, the organization needs to be ready to support them in their efforts. You can consider some proactive efforts to encourage users to progress through stages. For more information, see the [**community of practice**](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-community-of-practice) and the [**user support**](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-user-support) articles.

## Solution adoption phases

Solution adoption is concerned with measuring the impact of individual Power BI solutions. It is also concerned with the level of value solutions provide. The scope for evaluating solution adoption is for one set of requirements, like a set of reports or a single Power BI app.

As a solution progresses to phases 3 or 4, expectations to operationalize the solution are higher.

**Tip**The importance of scope on expectations for governance is described in the [**content delivery scope**](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-content-delivery-scope) article. That concept is closely related to this topic, but this article approaches it from a different angle. It considers when you already have a solution that is operationalized and distributed to many users. That doesn't immediately equate to phase 4 solution adoption, as the concept of solution adoption focuses on how much value the content delivers.

### Solution phase 1 – Exploration

Common characteristics of phase 1 solution adoption include:

* Exploration and experimentation are the main approaches to testing out new ideas. Exploration of new ideas can occur through informal self-service BI, or through a formal proof of concept (POC), which is purposely narrow in scope. The goal is to confirm requirements, validate assumptions, address unknowns, and mitigate risks.
* A small group of users test the proof of concept solution and provide useful feedback.
* All exploration—and initial feedback—could occur within Power BI Desktop or Excel. Use of the Power BI service is limited.

### Solution phase 2 – Functional

Common characteristics of phase 2 solution adoption include:

* The solution is functional and meets the basic set of user requirements. There are likely plans to iterate on improvements and enhancements.
* The solution is deployed to the Power BI service.
* All necessary supporting components are in place, such as gateways to support scheduled refresh.
* Users are aware of the solution and show interest in using it. Potentially, it may be a limited preview release, and may not yet be ready to promote to a production [workspace](https://docs.microsoft.com/en-us/power-bi/collaborate-share/service-create-the-new-workspaces).

### Solution phase 3 – Valuable

Common characteristics of phase 3 solution adoption include:

* Target users find the solution is valuable and experience tangible benefits.
* The solution is promoted to a production [workspace](https://docs.microsoft.com/en-us/power-bi/collaborate-share/service-create-the-new-workspaces).
* Validations and testing occur to ensure data quality, accurate presentation, accessibility, and acceptable performance.
* Content is [endorsed](https://docs.microsoft.com/en-us/power-bi/collaborate-share/service-endorse-content), when appropriate.
* Usage metrics for the solution are actively monitored.
* User feedback loops are in place to facilitate suggestions and improvements that can contribute to future releases.
* Solution documentation is generated to support the needs of information consumers (such as data sources used or how metrics are calculated), and help future creators (such as documenting any future maintenance or planned enhancements).
* Ownership and subject matter experts for the content is clear.
* Report branding and theming are in place, and they are inline with governance guidelines.

### Solution phase 4 – Essential

Common characteristics of phase 4 solution adoption include:

* Target users actively and routinely use the solution, and it's considered essential for decision-making purposes.
* The solution resides in a [production workspace](https://docs.microsoft.com/en-us/power-bi/create-reports/deployment-pipelines-overview) well-separated from development and test content. Change management and release management is carefully controlled due to the impact of changes.
* A subset of users regularly provide feedback to ensure the solution continues to meet requirements.
* Expectations for the success of the solution are clear and are measured.
* Expectations for support of the solution are clear, especially if there are service level agreements.
* The solution aligns with organizational governance guidelines and practices.
* Most content is [certified](https://docs.microsoft.com/en-us/power-bi/collaborate-share/service-endorse-content) since it's critical in nature.
* Formal user acceptance testing for new changes may occur, particularly for IT-managed content.

# Data culture

Building a data culture is closely related to adopting Power BI, and it's often a key aspect of an organization's digital transformation. The term data culture can be defined in different ways by different organizations. In this series of articles, data culture means a set of behaviors and norms in the organization. It encourages a culture that regularly employs informed data decision-making:

* By more stakeholders throughout more areas of the organization.
* Based on analytics, not opinion.
* In an effective, efficient way that is based on best practices endorsed by the [Center of Excellence](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-center-of-excellence).
* Based on trusted data.
* That reduces reliance on undocumented tribal knowledge.
* That reduces reliance on hunches and gut decisions.

**Important**Think of data culture as what you do, not what you say. Your data culture is not a set of rules (that's governance). So, data culture is a somewhat abstract concept. It's the behaviors and norms that are allowed, rewarded, and encouraged—or those that are disallowed and discouraged. Bear in mind that a healthy data culture motivates employees at all levels of the organization to generate and distribute actionable knowledge.

Within an organization, certain business units or teams are likely to have their own behaviors and norms for getting things done. It means that the specific ways that data culture objectives are achieved can vary across organizational boundaries. What's important is that they should all align with the organizational data culture objectives. This can be thought of as aligned autonomy.

The following diagram conveys the inter-related aspects that influence your data culture:



The above circular diagram represents the somewhat ambiguous relationships among the following items:

* **Data culture** as the outer circle: all topics contained within it contribute to the state of the data culture.
* **Organizational adoption** (including the implementation aspects of **mentoring and user enablement, user support, community of practice, governance** and **system oversight**) as the inner circle: all topics are major contributors to the data culture.
* **Executive support** and the **Center of Excellence** are drivers for the success of organizational adoption.
* **Data literacy, data democratization** and **data discovery** are data culture aspects that are heavily influenced by organizational adoption.
* **Content ownership and management** and **content delivery scope** are closely related to data democratization.

All items in the above diagram are discussed throughout the remainder of this series of articles.

## Data culture vision

The concept of data culture is imprecise and can be difficult to define and measure. Even though it's challenging to articulate in a way that is meaningful, actionable, and measurable, it's important that you have a well-understood definition of what a healthy data culture means to your organization. This vision of a healthy data culture should:

* Originate from the executive level.
* Align with organizational objectives.
* Directly influence your adoption strategy.
* Serve as the high-level guiding principles for enacting governance policies and guidelines.

Data culture outcomes are not specifically mandated. Rather, the state of the data culture is the result of following the governance rules as they are enforced (or the lack thereof). Leaders at all levels need to actively demonstrate what's important through their actions, including how they praise, recognize, and reward staff members who take initiative. It's what makes the concept of data culture imprecise and somewhat abstract.

**Tip**If you can take for granted that your efforts to develop a data solution (such as a dataset or a report) will be valued and appreciated, that's an excellent indicator of a healthy data culture. Sometimes, however, it depends on what your immediate manager values most.

The initial motivation for establishing a data culture often comes from a specific strategic business problem or initiative. It may be:

* A reactive change, such as responding to new agile competition.
* A proactive change, such as initiating a new line of business, or expanding into new markets to seize a "green field" opportunity. It can be relatively easy to be data-driven from the beginning when there are fewer constraints and complications, compared with an established organization.
* Driven by external changes, such as pressure to eliminate inefficiencies and redundancies during an economic downturn.

In any of these situations, there is often a specific area where the data culture takes root. The specific area could be a scope of effort that is smaller than the entire organization, even if it is still significant. Once necessary changes are made at this smaller scope, they can be incrementally replicated and adapted for the rest of the organization.

Although technology can help advance the goals of a data culture, implementing specific tools or features isn't the objective. This adoption series of articles covers a lot of topics that contribute to a healthy data culture. The remainder of this article addresses three essential aspects of data culture: [data discovery](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-data-culture#data-discovery), [data democratization](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-data-culture#data-democratization), and [data literacy](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-data-culture#data-literacy).

## Data discovery

A successful data culture depends on users working with the right data in their day-to-day activities. To achieve this goal, users need to find and access data sources, reports, and other artifacts.

Data discovery is the ability to effectively search for, and locate, relevant data sources and artifacts across the organization. Primarily, data discovery is concerned with improving awareness that data exists, particularly when data is siloed in departmental systems. Once aware of its existence, a user can go through the standard process to request access to the information. Today, technology helps a lot with data discovery, advancing well past asking colleagues where to find data artifacts.

**Tip**It's important to have a clear and simple process so users can request access to data. Knowing that a data artifact exists—but unable to access it within the guidelines and processes established by the domain owner—can be a source of frustration for users. It can force them to use inefficient workarounds rather than pursue requesting access through the proper channels.

Data discovery contributes to adoption efforts and the implementation of governance practices by:

* Encouraging the use of trusted high-quality data sources.
* Encouraging users to take advantage of investments in existing data resources.
* Promoting the use and enrichment of existing Power BI artifacts.
* Helping people understand who owns and manages data artifacts.
* Establishing connections between consumers, creators, and owners.

In Power BI, the [datasets hub](https://docs.microsoft.com/en-us/power-bi/connect-data/service-datasets-hub) and [use of endorsements](https://docs.microsoft.com/en-us/power-bi/collaborate-share/service-endorse-content) help promote data discovery of [shared datasets](https://docs.microsoft.com/en-us/power-bi/connect-data/service-datasets-across-workspaces). It also encourages the [reuse and augmentation](https://docs.microsoft.com/en-us/power-bi/connect-data/desktop-directquery-datasets-azure-analysis-services) of datasets by self-service creators. Further, data catalog solutions such as [Azure Purview](https://docs.microsoft.com/en-us/azure/purview/overview), which can scan and catalog an entire Power BI tenant, are extremely valuable for data discovery purposes. They can record metadata tags and descriptions to provide deeper context and meaning.

## Data democratization

Data democratization refers to putting data into the hands of more users who are responsible for solving business problems. It's about enabling them to make decisions with the data.

**Note**The concept of data democratization does not imply a lack of security, nor does it imply a lack of justification based on job role. As part of a healthy data culture, data democratization helps reduce shadow IT by providing data artifacts that are secured, governed, well-managed, and that meet business needs in cost effective and timely ways.

Your organization's position on data democratization will have a wide-reaching impact on adoption and governance-related efforts. Here are some examples of Power BI governance decisions that can impact on data democratization:

* Who is permitted to have Power BI Desktop installed?
* Who is permitted to have Power BI Pro or Power BI Premium Per User (PPU) licenses?
* What is the desired level of self-service BI user enablement? How does this vary based on business unit or job role?
* What is the desired balance between enterprise BI and self-service BI?
* Are there data sources that are strongly preferred? What is the allowed use of unsanctioned data sources?
* Who can manage content? Is this decision different for data versus reports? Is the decision different for enterprise BI users versus decentralized users who own and manage self-service BI content?
* Who can consume content? Is this decision different for external partners, customers, and suppliers?

**Warning**If access to data and/or the ability to perform analytics is limited to a select number of individuals in the organization, that’s typically a warning sign since the ability to work with data is a key characteristic of a data culture.

## Data literacy

Data literacy refers to the ability to interpret, create, and communicate data accurately and effectively.

Training efforts, as described in the [mentoring and user enablement](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-mentoring-and-user-enablement) article, often focus on how to use the technology itself. Technology skills are important to produce high-quality solutions, however it's also important to consider how to purposely advance data literacy throughout the organization. Put another way, successful adoption takes a lot more than merely providing Power BI software and licenses to users.

How you go about improving data literacy in your organization depends on many factors, such as current user skillsets, complexity of the data, and the types of analytics that are required. Several things you can focus on that are related to data literacy include:

* Interpreting charts and graphs.
* Assessing the validity of data.
* Performing root cause analysis.
* Discerning correlation and causation.
* Understanding how context and outliers affect results that are presented.
* Using storytelling to help consumers quickly understand and act.

**Tip**If you're struggling to get data culture or governance efforts approved, focusing on tangible benefits that you can achieve with data discovery ("find the data"), data democratization ("use the data"), or data literacy ("understand the data") can help. It can also be helpful to focus on specific problems that can be solved or mitigated through data culture advancements. Getting the right stakeholders to agree on the problem is usually the first step. Then, it's a matter of getting the stakeholders to agree on the strategic approach to a solution, and from there on to the solution details.

## Considerations and key actions

Here are some considerations and key actions you can take to strengthen your data culture:

* Give serious consideration to the type of data culture you want to cultivate. Ideally, it's from a position of user empowerment than a position of command and control.
* Talk to stakeholders in different business units to understand what analytics practices are currently working well and what isn't working well for data-driven decision-making. Conduct a series of workshops to understand current state and formulate the desired future state.
* Talk to stakeholders in IT, BI, and/or the [COE](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-center-of-excellence) to understand what [governance](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-governance) constraints need consideration. These talks can present an opportunity to educate teams on topics like security and infrastructure, and what Power BI actually is (and that it's significantly more powerful than a query tool).
* Verify the level of [executive sponsorship](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-executive-sponsorship) and support you have in place to advance data culture goals.
* Make purposeful decisions about your BI strategy. It includes deciding what the ideal balance of business-led self-service BI, managed self-service BI, and enterprise BI should be for the key business units in the organization (discussed in the [content ownership and management](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-content-ownership-and-management) article). Also consider how it relates to the extent of published content for personal BI, team BI, departmental BI, and enterprise BI (discussed in the [content delivery scope](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-content-delivery-scope) article). Determine how these decisions affect your action plan.
* Begin creating an action plan for immediate, short-term, and long-term action items. Identify business groups and problems that represent a "quick win" and can make a visible difference.

## Maturity levels

The following maturity levels will help you assess the current state of your data culture:

|  |  |
| --- | --- |
| **Level** | **State of data culture** |
| 100: Initial | There are business intelligence (BI) initiatives taking place—with some successes—in various areas of the organization. These activities are occurring in a somewhat chaotic manner, with few formal processes, and without a strategic plan.A significant backlog of requests may exist for the enterprise BI team.There is a lack of oversight and visibility into self-service BI operations. The successes or failures of BI solutions are not well-understood. |
| 200: Repeatable | Multiple teams have had measurable successes with self-service BI solutions.Investments are made to identify the ideal balance of enterprise BI and self-service BI. |
| 300: Defined | Specific goals are established for advancing the data culture, and these goals are implemented incrementally.Effective self-service BI practices are incrementally—and purposely—replicated throughout more areas of the organization. |
| 400: Capable | The data culture goals to employ informed decision-making are aligned with organizational objectives, actively supported by the executive sponsor, and directly impact on the adoption strategies put into place.A healthy and productive partnership exists between the COE, business units, and IT.It's common that individuals who take initiative in building valuable BI solutions are recognized and rewarded. |
| 500: Efficient | Regular review of key performance indicators validate that data culture results are aligned with intentions.The business value of BI solutions is regularly evaluated and measured; feedback loops encourage ongoing improvements.Continual improvement of organizational adoption, user adoption, and solution adoption are top priorities. Learnings are incrementally adapted throughout the organization on an ongoing basis. |

# Executive sponsorship

When planning to advance the data culture and the state of organizational adoption for Power BI, it's crucial to have executive support. An executive sponsor is imperative because adopting Power BI is far more than just a technology project.

Although some successes can be achieved by a few determined individual contributors, the organization is in a significantly better position when a senior leader is engaged, supportive, informed, and available to assist with activities such as:

* Formulating a strategic vision and priorities for BI and analytics.
* Leading by example by actively using Power BI in a way that's consistent with data culture and adoption goals.
* Allocating staffing and prioritizing resources.
* Approving funding (for example, Power BI licenses).
* Communicating announcements that are of critical importance.
* Decision-making, particularly for strategic-level governance decisions.
* Dispute resolution (for escalated issues that cannot be resolved by operational or tactical personnel).
* Supporting organizational changes (for example, creating or expanding the [Center of Excellence](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-center-of-excellence)).

**Important**The ideal executive sponsor has sufficient credibility, influence, and authority throughout the organization.

## Identifying an executive sponsor

There are multiple ways to identify an executive sponsor.

### Top-down pattern

An executive sponsor may be selected by a more senior executive. For example, the Chief Executive Officer (CEO) may hire a Chief Data Officer (CDO) or Chief Analytics Officer (CAO) to advance the organization's data culture objectives. The CDO or CAO then becomes the ideal candidate to serve as the executive sponsor for Power BI (or analytics in general).

Here's another example: The CEO may empower an existing executive, such as the Chief Financial Officer (CFO), because they have a good track record leading data and analytics in their organization. As the new executive sponsor, the CFO could then lead efforts to replicate the finance team's success to other areas of the organization.

**Note**Having a Power BI executive sponsor at the C-level is an excellent indicator. It indicates that the organization recognizes the importance of data as a strategic asset and is advancing its data culture in a positive direction.

### Bottom-up pattern

Alternatively, a candidate for the executive sponsor role could emerge due to the success they've experienced with BI. For example, a business unit within the organization, such as Finance, has organically achieved great success with respect to their use of data and analytics. Essentially, they successfully formed their own data culture on a small scale. A leader who hasn't reached the executive level (such as the Finance Director) may then grow into the executive sponsor role by sharing successes with other business units across the organization.

The bottom-up approach is more likely to occur in smaller organizations. It's because the return on investment and strategic imperative of a data culture or digital transformation is not an urgent priority for C-level executives.

With a bottom-up approach, the sponsor may be able to make some progress, but they won't have formal authority over other business units. Without clear authority, it's only a matter of time until challenges occur that are beyond their level of authority. For this reason, the top-down approach has a higher probability of success. However, initial successes with a bottom-up approach can convince leadership to increase their level of sponsorship, which may start a healthy competition across other business units in the adoption of BI.

## Considerations and key actions

Here is a list of considerations and key actions you can take to establish or strengthen executive support for Power BI:

* Ensure you have clarity on who your executive sponsor is.
* Identify someone in a sufficient position of influence and authority (across organizational boundaries) who understands the value and impact of business intelligence. It is important that the individual has a vested interest in the success of analytics in the organization.
* Involve your executive sponsor in all strategic-level governance decisions involving business intelligence and data management.
* Involve your executive sponsor in all data culture initiatives to ensure alignment and consensus on goals and priorities.
* Formalize the arrangement with documented responsibilities for the executive sponsor role, so there is no uncertainty about expectations.
* Consider naming a backup executive sponsor. The backup can attend meetings in the sponsor's absence and make time-sensitive decisions when necessary.
* Identify influential advocates within the leadership team for each business unit. In addition to your executive sponsor, it is easier to accomplish your objectives if you have the cooperation and involvement of business unit leaders.

## Maturity levels

The following maturity levels will help you assess your current state of executive support:

|  |  |
| --- | --- |
| **Level** | **State of Power BI executive support** |
| 100: Initial | There is awareness from at least one executive about the strategic importance of how Power BI can play a part in advancing the organization's data culture goals. However, neither a Power BI sponsor nor an executive-level decision-maker is identified. |
| 200: Repeatable | Executive support exists for Power BI through informal channels and relationships. |
| 300: Defined | A formal arrangement exists for C-level Power BI sponsorship and support, with well-understood expectations for the role. |
| 400: Capable | Senior-level support is in place to grow and sustain the investment in Power BI by someone with sufficient authority across organizational boundaries. |
| 500: Efficient | Executive support is a driver for advancing the data culture vision. The executive sponsor is involved with ongoing organizational adoption improvements, and measurable goals are in place. |

# Content ownership and management

There are three primary strategies for how business intelligence (BI) content is owned and managed: business-led self-service BI, managed self-service BI, and enterprise BI. For the purposes of this series of articles, the term content refers to any type of data artifact. It's synonymous with solution.

The organization's data culture is the driver for why, how, and by whom each of these three content ownership strategies are implemented.



The areas in the above diagram include:

|  |  |
| --- | --- |
| **Area** | **Description** |
| Area 1. | **Business-led self-service BI:** All content is owned and managed by the creators and subject matter experts within a business unit. This ownership strategy is also known as a decentralized or bottom-up BI strategy. |
| Area 2. | **Managed self-service BI:** The data is owned and managed by a centralized team, whereas business users take responsibility for reports and dashboards. This ownership strategy is also known as discipline at the core and flexibility at the edge. |
| Area 3. | **Enterprise BI:** All content is owned and managed by a centralized team such as IT, enterprise BI, or the Center of Excellence (COE). |

It's unlikely that an organization operates exclusively with one content ownership and management strategy. Depending on your data culture, one strategy might be far more dominant than the others. The choice of strategy could differ from solution to solution, or from team to team. In fact, a single team can actively use multiple strategies if it's both a consumer of enterprise BI content and a producer of its own self-service content. The strategy to pursue depends on factors such as:

* Requirements for a solution (such as a collection of reports).
* User skills.
* Ongoing commitment for training and skills growth.
* Flexibility required.
* Complexity level.
* Priorities and leadership commitment level.

The organization's [data culture](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-data-culture)—particularly its position on data democratization—has considerable influence on the extent of which of the three content ownership strategies are used. While there are common patterns for success, there is no one-size-fits-all approach. Each organization's governance model and approach to content ownership and management should reflect the differences in data sources, applications, and business context.

How content is owned and managed has a significant effect on [governance](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-governance), the extent of [mentoring and user enablement](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-mentoring-and-user-enablement), needs for [user support](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-user-support), and the [COE](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-center-of-excellence) operating model.

As discussed in the [governance](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-governance) article, the level of governance and oversight depends on:

* Who owns and manages the content.
* The [scope of content delivery](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-content-delivery-scope).
* The data subject area and sensitivity level.
* The importance of the data.

In general:

* Business-led self-service BI content is subject to the least stringent governance and oversight controls.
* Managed self-service BI content is subject to moderately stringent governance and oversight controls.
* Enterprise BI solutions are subject to more rigorous governance controls and oversight.

As stated in the [adoption maturity levels](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-maturity-levels) article, organizational adoption measures the state of data management processes and governance. The choices made for content ownership and management significantly affect how organizational adoption is achieved.

## Ownership and stewardship

There are many roles related to data management. Roles can be defined many ways and can be easily misunderstood. The following table presents possible ways you may conceptually define these roles:

|  |  |
| --- | --- |
| **Role** | **Description** |
| Data steward | Responsible for defining and/or managing acceptable data quality levels as well as master data management (MDM). |
| Subject matter expert (SME) | Responsible for defining what the data means, what it is used for, who may access it, and how the data is presented to others. Collaborates with domain owner as needed and supports colleagues in their use of data. |
| Technical owner | Responsible for creating, maintaining, publishing, and securing access to data and reporting artifacts. |
| Domain owner | Higher-level decision-maker who collaborates with governance teams on data management policies, processes, and requirements. Decision-maker for defining appropriate and inappropriate uses of the data. Participates on the data governance board, as described in the [governance](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-governance) article. |

Assigning ownership for a data domain tends to be more straightforward when managing transactional source systems. In BI solutions, data is integrated from multiple domain areas, then transformed and enriched. For downstream analytical solutions, the topic of ownership becomes more complex.

**Note**Be clear about who is responsible for managing data artifacts. It's crucial to ensure a good experience for content consumers. Specifically, clarity on ownership is helpful for:

* Who to contact with questions.
* Feedback.
* Enhancement requests.
* Support requests.

In the Power BI service, content owners can set the [**contact list property**](https://docs.microsoft.com/en-us/power-bi/create-reports/service-item-contact) for many types of artifacts. The contact list is also used in security workflows. For example, when a user is sent a URL to open an app but they don't have permission, they will be presented with an option to make a request for access.

Guidelines for being successful with ownership:

* Define how ownership and stewardship terminology is used in your organization, including expectations for these roles.
* Set [contacts for each workspace](https://docs.microsoft.com/en-us/power-bi/collaborate-share/service-create-the-new-workspaces#create-a-contact-list) and for individual artifacts to communicate ownership and/or support responsibilities.
* Specify 2-4 [workspace administrators](https://docs.microsoft.com/en-us/power-bi/collaborate-share/service-new-workspaces#roles-in-the-new-workspaces) and conduct an [audit](https://docs.microsoft.com/en-us/rest/api/power-bi/admin/groups_getgroupusersasadmin) of workspace admins on a regular basis (perhaps twice a year). Workspace admins might be directly responsible for managing workspace content, or it may be that those tasks are assigned to colleagues who do the hands-on work. In all cases, workspace admins should be able to easily contact owners of specific content.
* Include consistent branding on reports to indicate who produced the content and who to contact for help. A small image or text label located in the report footer is valuable, especially when the report is exported from the Power BI service. A standard template, as described in the [mentoring and user enablement](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-mentoring-and-user-enablement) article, can encourage and simplify the consistent use of branding.
* Make use of best practices reviews with the COE, which are discussed in the [COE](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-center-of-excellence) article.

The remainder of this article covers considerations related to the three content ownership and management strategies.

## Business-led self-service BI

With business-led self-service BI, all content is owned and managed by creators and subject matter experts. Because responsibility is retained within a business unit, this strategy is often described as the bottom-up, or decentralized, approach.

**Important**The concept of business-led self-service BI is not the same as shadow IT. In both scenarios, BI content is created, owned, and managed by business users. However, shadow IT implies that the business unit is circumventing IT and so the solution is not sanctioned. With business-led self-service BI solutions, the business unit has full authority to create and manage content. Resources and support from the [**COE**](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-center-of-excellence) are available to self-service content creators. It's also expected that the business unit complies with all established data governance guidelines and policies.

Business-led self-service BI is most suitable when:

* Decentralized data management aligns with the organization's data culture, and the organization is prepared to support these efforts.
* Data exploration and freedom to innovate is a high priority.
* The business unit wants to have the most involvement and retain the highest level of control.
* The business unit has skilled people capable of—and fully committed to—supporting solutions through the entire lifecycle. It covers all types of Power BI artifacts, including the data (dataflows and datasets), the visuals (reports and dashboards), and apps.
* The flexibility to respond to changing business conditions and react quickly outweighs the need for stricter governance and oversight.

Guidelines for being successful with business-led self-service BI:

* Teach your creators to use the same techniques that IT would use, like [shared datasets](https://docs.microsoft.com/en-us/power-bi/connect-data/service-datasets-across-workspaces) and [dataflows](https://docs.microsoft.com/en-us/power-bi/transform-model/dataflows/dataflows-introduction-self-service). Having fewer duplicated datasets reduces maintenance, improves consistency, and reduces risk.
* Focus on providing mentoring, training, resources, and documentation (described in the [mentoring and user enablement](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-mentoring-and-user-enablement) article). The importance of these efforts can't be overstated. Be prepared for skill levels of self-service content creators to vary significantly. It's also common for a solution to deliver excellent business value yet be built in such a way that it won't scale or perform well over time (as historic data volumes increase). Having the [COE](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-center-of-excellence) available to help when these situations arise is very valuable.
* Provide guidance on the best way to use endorsements. The [promoted endorsement](https://docs.microsoft.com/en-us/power-bi/collaborate-share/service-endorse-content#promote-content) is for content produced by self-service creators. Consider reserving use of the [certified endorsement](https://docs.microsoft.com/en-us/power-bi/collaborate-share/service-endorse-content#certify-content) for enterprise BI content and managed self-service BI content (discussed next).
* Analyze the [activity log](https://docs.microsoft.com/en-us/power-bi/admin/service-admin-auditing) to discover situations where the COE could proactively contact self-service owners to offer helpful information. It's especially useful when a suboptimal usage pattern is detected. For example, log activity could reveal overuse of individual item sharing when an app or workspace roles may be a better choice. The data from the activity log allows the COE to offer support and advice to the business units. In turn, this information can help increase the quality of solutions, while allowing the business to retain full ownership and control of their content.

## Managed self-service BI

Managed self-service BI is a blended approach. The data is owned and managed by a centralized team (such as IT, enterprise BI, or the COE), while responsibility for reports and dashboards belongs to creators and subject matter experts within the business units.

This approach is often called [*discipline at the core and flexibility at the edge*](https://docs.microsoft.com/en-us/power-bi/guidance/center-of-excellence-microsoft-business-intelligence-transformation#discipline-at-the-core). It's because the data architecture is maintained by a single team with an appropriate level of discipline and rigor. Business units have the flexibility to create reports and dashboards based on centralized data. This approach allows report creators to be far more efficient because they can remain focused on delivering value from their data analysis and visuals.

Managed self-service BI is most suitable when:

* Centralized data management aligns with the organization's data culture.
* The organization has a team of BI experts who manage the data architecture.
* There's value in the reuse of data by many self-service report creators across organizational boundaries.
* Self-service report creators need to produce content at a pace faster than the centralized team can accommodate.
* Different people are responsible for handling data preparation, data modeling, and report creation.

Guidelines for being successful with self-service BI:

* Teach users to [separate model and report development](https://docs.microsoft.com/en-us/power-bi/guidance/report-separate-from-model#separate-report-files). They can use [live connections](https://docs.microsoft.com/en-us/power-bi/connect-data/desktop-report-lifecycle-datasets) to create reports based on existing datasets. When the dataset is decoupled from the report, it promotes data reuse by many reports and many authors. It also facilitates the separation of duties.
* Use [dataflows](https://docs.microsoft.com/en-us/power-bi/transform-model/dataflows/dataflows-introduction-self-service) to centralize data preparation logic and to share commonly used data tables—like date, customer, product, or sales—with many dataset creators. Refine the dataflow as much as possible, using friendly column names and correct data types to reduce the downstream effort required by dataset authors, who consume the dataflow as a source. Dataflows are an effective way to reduce the time involved with data preparation and improve data consistency across datasets. The use of dataflows also reduces the number of data refreshes on source systems and allows fewer users requiring direct access to source systems.
* When self-service creators need to augment an existing dataset with departmental data, educate them to use [DirectQuery connections to Power BI datasets and Azure Analysis Services](https://docs.microsoft.com/en-us/power-bi/connect-data/desktop-directquery-datasets-azure-analysis-services). This feature allows for an ideal balance of self-service enablement while taking advantage of the investment in data assets that are centrally managed.
* Use the [certified endorsement](https://docs.microsoft.com/en-us/power-bi/collaborate-share/service-endorse-content#certify-content) for datasets and dataflows to help content creators identify trustworthy sources of data.
* Include consistent branding on all reports to indicate who produced the content and who to contact for help. Branding is particularly helpful to distinguish content that is produced by self-service creators. A small image or text label in the report footer is valuable when the report is exported from the Power BI service.
* Consider implementing separate [workspaces](https://docs.microsoft.com/en-us/power-bi/collaborate-share/service-new-workspaces) for storing data and reports. This approach allows for better clarity on who is responsible for content. It also allows for more restrictive [workspace roles](https://docs.microsoft.com/en-us/power-bi/collaborate-share/service-new-workspaces#roles-in-the-new-workspaces) assignments. That way, report creators can only publish content to their reporting workspace; and, read and build dataset permissions allow creators to create new reports with row-level security (RLS) in effect, when applicable.
* Use the [Power BI REST APIs](https://docs.microsoft.com/en-us/rest/api/power-bi/) to compile an inventory of Power BI artifacts. Analyze the ratio of datasets to reports to evaluate the extent of dataset reuse.

## Enterprise BI

Enterprise BI is a centralized approach in which all content is owned and managed by a centralized team. This team is usually IT, enterprise BI, or the COE.

Enterprise BI is most suitable when:

* Centralizing content management with a single team aligns with the organization's data culture.
* The organization has BI expertise to manage all the BI artifacts end-to-end.
* The content needs of consumers are well-defined, and there's little need to customize or explore data beyond the reporting solution that's delivered.
* Content ownership and direct access to data needs to be limited to a small number of people.
* The data is highly sensitive or subject to regulatory requirements.

Guidelines for being successful with enterprise BI:

* Implement a rigorous process for use of the [certified endorsement](https://docs.microsoft.com/en-us/power-bi/collaborate-share/service-endorse-content#certify-content) for datasets, reports, and apps. Not all enterprise BI content needs to be certified, but much of it probably should be. Certified content should indicate that data quality has been validated. Certified content should also follow change management rules, have formal support, and be fully documented. Because certified content has passed rigorous standards, the expectations for trustworthiness are higher.
* Include consistent branding on enterprise BI reports to indicate who produced the content, and who to contact for help. A small image or text label in the report footer is valuable when the report is exported from the Power BI service.
* If you use specific report branding to indicate enterprise BI content, be careful with the save a copy functionality that would allow a user to download a copy of a report and personalize it. Although this functionality is an excellent way to bridge enterprise BI with managed self-service BI, it dilutes the value of the branding. A more seamless solution is to provide a separate [Power BI Desktop template file](https://docs.microsoft.com/en-us/power-bi/create-reports/desktop-templates#using-report-templates) for self-service authors. The template defines a starting point for report creation with a live connection to an existing dataset, and it doesn't include branding. The template file can be shared as a link within a Power BI app, or from the community site.

## Ownership transfers

Occasionally, the ownership of a particular solution may need to be transferred to another team. An ownership transfer from a business unit to a centralized team can happen when:

* A business-led solution is used by a significant number of people, or it now supports critical business decisions. In these cases, the solution should be managed by a team with processes in place to implement higher levels of governance and support.
* A business-led solution is a candidate to be used far more broadly throughout the organization, so it needs to be managed by a team who can set security and deploy content widely throughout the organization.
* A business unit no longer has the expertise, budget, or time available to continue managing the content.
* The size or complexity of a solution has grown to a point where a different data architecture or redesign is required.
* A proof of concept is ready to be operationalized.

The [COE](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-center-of-excellence) should have well-documented procedures for identifying when a solution is a candidate for ownership transfer. It's very helpful if help desk personnel know what to look for as well. Having a customary pattern for self-service creators to build and grow a solution, and hand it off in certain circumstances, is an indicator of a productive and healthy data culture. A simple ownership transfer may be addressed during COE office hours; a more complex transfer may warrant a small project managed by the COE.

**Note**There's potential that the new owner will need to do some refactoring before they're willing to take full ownership. Refactoring is most likely to occur with the less visible aspects of data preparation, data modeling, and calculations. If there are any manual steps or flat file sources, it's an ideal time to apply those enhancements. The branding of reports and dashboards may also need to change, for example, if there's a footer indicating report contact or a text label indicating that the content is certified.

It's also possible for a centralized team to transfer ownership to a business unit. It could happen when:

* The team with domain knowledge is better equipped to own and manage the content going forward.
* The centralized team has created the solution for a business unit that doesn't have the skills to create it from scratch, but it can maintain and extend the solution going forward.

**Tip**Don't forget to recognize and reward the work of the original creator, particularly if ownership transfers are a common occurrence.

## Considerations and key actions

Here is a list of considerations and key actions you can take to strengthen your approach to content ownership and management:

* Ensure you deeply understand how content ownership and management is happening throughout the organization. Recognize that there likely won't be a one-size-fits-all approach to apply uniformly across the entire organization.
* Determine what is currently working well, what isn't working well, and what the desired balance is between the three ownership strategies. If necessary, schedule discussions with specific people on various teams. Develop a plan for moving from the current state to the desired state.
* If your enterprise BI team currently has challenges related to scheduling and priorities, do an assessment to determine if a managed self-service BI strategy can be put in place to empower more content creators throughout the organization. Managed self-service BI can be extremely effective on a global scale.
* Clarify terms used in your organization for owner, data steward, and subject matter expert. Make sure roles and responsibilities are documented, including backup personnel.
* Ensure that all your content owners—from both the business and IT—are part of your [community of practice](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-community-of-practice).
* Determine how you will use the contacts feature in Power BI. Communicate with content creators about how it should be used, and why it's important.
* If ownership transfers occur regularly, create a process for how it will work.
* Determine your strategy for using [external tools](https://powerbi.microsoft.com/blog/community-tools-for-enterprise-powerbi-and-analysisservices/) for advanced authoring capabilities and increased productivity.

## Maturity levels

The following maturity levels will help you assess the current state of your content ownership and management:

|  |  |
| --- | --- |
| **Level** | **State of Power BI content ownership and management** |
| 100: Initial | Content is owned and managed by self-service creators throughout the organization in an uncontrolled way, without a specific strategy.A high ratio of datasets to reports exists, indicating an opportunity to improve data reusability and reduce the number of duplicate datasets.Discrepancies between different reports is common, causing distrust of content produced by others. |
| 200: Repeatable | A plan is in place for which content ownership and management strategy to use and in which circumstances.Initial steps are taken to improve the consistency and trustworthiness levels for self-service BI efforts.Guidance for the user community is available that includes expectations for self-service versus enterprise content. |
| 300: Defined | Managed self-service BI is a priority and an area of investment to further advance the data culture. The priority is to allow report creators the flexibility they need while using well-managed, secure, and trustworthy data sources.Report branding is consistently used to indicate who produced the content.A [mentoring program](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-mentoring-and-user-enablement) exists to educate self-service content creators on how to apply best practices and make good decisions. |
| 400: Capable | Criteria is defined to align governance requirements for self-service versus enterprise content.There is a plan in place for how to request and handle ownership transfers.Managed self-service BI—and techniques for the reuse of data—are commonly used and well-understood. |
| 500: Efficient | Proactive measures are in place to communicate with a user when any concerning user activities are detected in the activity log.External tools are used by highly proficient content creators to improve productivity and efficiency. |

# Content delivery scope

The four delivery scopes described in this article include personal BI, team BI, departmental BI, and enterprise BI. To be clear, focusing on the scope of a delivered BI solution does refer to the number of people who may view the solution, though the impact is much more than that. The scope strongly influences best practices for content distribution, sharing, security, and information protection. The scope has a direct correlation to the level of [governance](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-governance) (such as requirements for change management, support, or documentation), the extent of [mentoring and user enablement](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-mentoring-and-user-enablement), and needs for [user support](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-user-support). It also influences [user licensing](https://docs.microsoft.com/en-us/power-bi/admin/service-admin-licensing-organization) decisions.

The related [content ownership and management](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-content-ownership-and-management) article makes similar points. Whereas the focus of that article was on the content creator, the focus of this article is on the target content usage. Both inter-related aspects need to be considered to arrive at governance decisions and the Center of Excellence (COE) operating model.

**Important**Not all data and solutions are equal. Be prepared to apply different levels of data management and governance to different teams and various types of content. Standardized rules are easier to maintain, however flexibility or customization is often necessary to apply the appropriate level of oversight for particular circumstances. Your [**executive sponsor**](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-executive-sponsorship) can prove invaluable by reaching consensus across stakeholder groups when difficult situations arise.

## Scope of content delivery

The following diagram focuses on the number of target consumers who will consume the content.



The four scopes of content delivery shown in the above diagram include:

* **Personal BI:** Personal BI solutions are, as the name implies, intended for use by the creator. So, sharing content with others isn't an objective. Therefore, personal BI has the fewest number of target consumers.
* **Team BI:** Collaborates and shares content with a relatively small number of colleagues who work closely together.
* **Departmental BI:** Delivers content to a large number of consumers, who can belong to a department or business unit.
* **Enterprise BI:** Delivers content broadly across organizational boundaries to the largest number of target consumers. Enterprise content is most often managed by a centralized team and is subject to additional governance requirements.

Contrast the above four scopes of content delivery with the following diagram, which has an inverse relationship with respect to the number of content creators.



The four scopes of content creators shown in the above diagram include:

* **Personal BI:** Represents the largest number of creators because any user can work with data using business-led self-service BI methods. Although managed self-service BI methods can be used, it's less common with personal BI.
* **Team BI:** Colleagues within a team collaborate and share with each other using business-led self-service BI patterns. It has the next largest number of creators in the organization. Managed self-service BI patterns may also begin to emerge as skill levels advance.
* **Departmental BI:** Involves a smaller population of creators. They are likely to be considered power users who are using sophisticated tools to create sophisticated solutions. Managed self-service BI practices are very common and highly encouraged.
* **Enterprise BI:** Involves the smallest number of content creators because it typically includes only professional BI developers who work in the BI team, the COE, or in IT.

The [content ownership and management](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-content-ownership-and-management) article introduced the concepts of business-led self-service BI, managed self-service BI, and enterprise BI. The most common alignment between ownership and delivery scope is:

* **Business-led self-service BI ownership:** Commonly deployed as personal and team BI solutions.
* **Managed self-service BI ownership:** Can be deployed as personal, team, or departmental BI solutions.
* **Enterprise BI ownership:** Deployed as enterprise BI-scoped solutions.

Some organizations also equate self-service content with community-based support. It's the case when self-service content creators and owners are responsible for supporting the content they publish. The [user support](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-user-support) article describes multiple informal and formal levels for support.

**Note**The term sharing can be interpreted two ways: It's often used in a general way related to sharing content with colleagues, which could be implemented multiple ways. It can also reference a [**specific feature in Power BI**](https://docs.microsoft.com/en-us/power-bi/collaborate-share/service-share-dashboards), which is a specific implementation where a user or group is granted read-only access to a single artifact. In this article, the term sharing is meant in a general way to describe sharing content with colleagues. When the sharing feature is intended, this article will make a clear reference to that feature.

## Personal BI

Personal BI is about enabling an individual to gain analytical value. It's also about allowing them to more efficiently perform business tasks through the effective personal use of data, information, and analytics. It could apply to any type of information worker in the organization, not just data analysts and developers.

Sharing of content with others isn't the objective. Personal content can reside in Power BI Desktop or in a personal workspace in the Power BI service. Usage of the personal workspace is permitted with the free Power BI license.

Characteristics of personal BI:

* The creator's primary intention is data exploration and analysis, rather than report delivery.
* The content is intended to be analyzed and consumed by one person: the creator.
* The content may be an exploratory proof of concept that may, or may not, evolve into a project.

Guidelines for being successful with personal BI:

* Consider personal BI solutions to be like an analytical sandbox that has little formal governance and oversight from the governance team or COE. However, it's still appropriate to educate content creators that some general governance guidelines may still apply to personal content. Valid questions to ask include: Can the creator export the personal report and email it to others? Can the creator store a personal report on a non-organizational laptop or device? What limitations or requirements exist for content that contains sensitive data?
* See the techniques described for business-led self-service BI, and managed self-service BI in the [content ownership and management](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-content-ownership-and-management) article. They are highly relevant techniques that help content creators create efficient and personal BI solutions.
* Analyze data from the [activity log](https://docs.microsoft.com/en-us/power-bi/admin/service-admin-auditing) to discover situations where personal BI solutions appear to have expanded beyond the original intended usage. It's usually discovered by detecting a significant amount of content sharing from a personal workspace.

**Tip**See the [**adoption maturity levels**](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-maturity-levels) article for information about how users progress through the stages of user adoption. See the [**system oversight**](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-system-oversight#auditing-and-monitoring) article for information about usage tracking via the activity log.

## Team BI

Team BI is focused on a team of people who work closely together, and who are tasked with solving closely related problems using the same data. Collaborating and sharing content with each other in a workspace is usually the primary objective. Due to this work style, team members will typically each have a [Power BI Pro](https://docs.microsoft.com/en-us/power-bi/admin/service-admin-purchasing-power-bi-pro) or [Power BI Premium Per User (PPU)](https://docs.microsoft.com/en-us/power-bi/admin/service-premium-per-user-faq) license.

Content is often shared among the team more informally as compared to departmental or enterprise BI. For instance, the workspace is often sufficient for consuming content within a small team. It doesn't require for formality of publishing the workspace to distribute it as an app. There isn't a specific number of users when team-based delivery is considered too informal; each team can find the right number that works for them.

Characteristics of team BI:

* Content is created, managed, and viewed among a group of colleagues who work closely together.
* Collaboration and co-management of content is the highest priority.
* Formal delivery of reports may occur by report viewers (especially for managers of the team), but it's usually a secondary priority.
* Reports aren't always highly sophisticated or attractive; functionality and accessing the information is what matters most.

Guidelines for being successful with team BI:

* Ensure the COE is prepared to support the efforts of self-service creators publishing content for their team.
* Make purposeful decisions about how [workspace management](https://docs.microsoft.com/en-us/power-bi/collaborate-share/service-create-the-new-workspaces) will be handled. The workspace is a place to organize related content, a permissions boundary, and the scope for an app. It's tempting to start with one workspace per team, but that may not be flexible enough to satisfy all needs.
* See the techniques described for business-led self-service BI and managed self-service BI in the [content ownership and management](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-content-ownership-and-management) article. They are highly relevant techniques that help content creators create efficient and effective team BI solutions.

## Departmental BI

Content is delivered to members of a department or business unit. Content distribution to a larger number of consumers is a priority for departmental BI.

Usually there's a much larger number of consumers who are content viewers (versus a much smaller number of content creators). Therefore, a combination of [Power BI Pro](https://docs.microsoft.com/en-us/power-bi/admin/service-admin-purchasing-power-bi-pro) licenses, [Premium Per User](https://docs.microsoft.com/en-us/power-bi/admin/service-premium-per-user-faq) licenses, and/or [Premium capacity](https://docs.microsoft.com/en-us/power-bi/admin/service-premium-what-is#subscriptions-and-licensing) licenses may be used.

Characteristics of departmental BI delivery:

* A few content creators typically publish content for colleagues to consume.
* Formal delivery of reports and apps is a high priority to ensure consumers have the best experience.
* Additional effort is made to deliver more sophisticated and polished reports. Following best practices for data preparation and higher quality data modeling is also expected.
* Needs for change management and application lifecycle management (ALM) begin to emerge to ensure release stability and a consistent experience for consumers.

Guidelines for being successful with departmental BI delivery:

* Ensure the COE is prepared to support the efforts of self-service creators. Creators who publish content used throughout their department or business unit may emerge as candidates to become champions, or they may become candidates to join the COE as a satellite member.
* Make purposeful decisions about how [workspace management](https://docs.microsoft.com/en-us/power-bi/collaborate-share/service-create-the-new-workspaces) will be handled. The workspace is a place to organize related content, a permissions boundary, and the scope for an app. Several workspaces will likely be required to meet all the needs of a large department or business unit.
* Plan how [apps](https://docs.microsoft.com/en-us/power-bi/consumer/end-user-apps) will distribute content to the enterprise. An app can provide a significantly better user experience for consuming content. In many cases, content consumers can be granted permissions to view content via the app only, reserving workspace permissions management for content creators and reviewers only.
* As the importance and criticality level grows, expectations for trustworthiness grows too.
* Ensure that adequate training, mentoring, and documentation is available to support content creators. Best practices for data preparation, data modeling, and data presentation will result in better quality solutions.
* Provide guidance on the best way to use the [promoted endorsement](https://docs.microsoft.com/en-us/power-bi/collaborate-share/service-endorse-content#promote-content), and when the [certified endorsement](https://docs.microsoft.com/en-us/power-bi/collaborate-share/service-endorse-content#certify-content) may be permitted for departmental BI solutions.
* Ensure that the owner is identified for all departmental content. Clarity on ownership is helpful, including who to contact with questions, feedback, enhancement requests, or support requests. In the Power BI service, content owners can set the [contact list property](https://docs.microsoft.com/en-us/power-bi/create-reports/service-item-contact) for many types of artifacts. The contact list is also used in security workflows. For example, when a user is sent a URL to open an app but they don't have permission, they will be presented with an option to make a request for access.
* Consider using [deployment pipelines](https://docs.microsoft.com/en-us/power-bi/create-reports/deployment-pipelines-overview) in conjunction with separate [workspaces](https://docs.microsoft.com/en-us/power-bi/collaborate-share/service-create-the-new-workspaces). Deployment pipelines can support development, test, and production environments, which provide more stability for consumers.
* Consider enforcing the use of [sensitivity labels](https://docs.microsoft.com/en-us/power-bi/admin/service-security-data-protection-overview) to implement information protection on all content.
* Include consistent branding on reports to align with departmental colors and styling. It can also indicate who produced the content. For more information, see the [Content ownership and management](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-content-ownership-and-management) article. A small image or text label in the report footer is valuable when the report is exported from the Power BI service. A standard Power BI Desktop template file can encourage and simplify the consistent use of branding. For more information, see the [Mentoring and user enablement](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-mentoring-and-user-enablement) article.
* See the techniques described for business-led self-service BI and managed self-service BI in the [content ownership and management](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-content-ownership-and-management) article. They are highly relevant techniques that help content creators create efficient and effective departmental BI solutions.

## Enterprise BI

Enterprise BI content is typically managed by a centralized team and is subject to additional governance requirements. Content is delivered broadly across organizational boundaries.

Enterprise BI usually has a significantly larger number of consumers versus content creators. Therefore, a combination of [Power BI Pro](https://docs.microsoft.com/en-us/power-bi/admin/service-admin-purchasing-power-bi-pro) licenses, [Premium Per User](https://docs.microsoft.com/en-us/power-bi/admin/service-premium-per-user-faq) licenses, and/or [Premium capacity](https://docs.microsoft.com/en-us/power-bi/admin/service-premium-what-is#subscriptions-and-licensing) licenses may be used.

Characteristics of enterprise BI delivery:

* A centralized team of BI experts manages the content end-to-end and publishes it for others to consume.
* Formal delivery of reports and apps is a high priority to ensure consumers have the best experience.
* The content is highly sensitive, subject to regulatory requirements, or is considered extremely critical.
* Published enterprise-level datasets and dataflows may be used as a source for self-service creators, thus creating a chain of dependencies to the source data.
* Stability and a consistent experience for consumers are highly important. Application lifecycle management, such as [deployment pipelines](https://docs.microsoft.com/en-us/power-bi/create-reports/deployment-pipelines-overview) and [DevOps techniques](https://powerbi.microsoft.com/blog/automate-deployments-with-deployment-pipelines-api-preview/), is commonly used. Change management processes to review and approve changes before they're deployed are commonly used for enterprise BI content, for example, by a change review board or similar group.
* Processes exist to gather requirements, prioritize efforts, and plan for new projects or enhancements to existing content.
* Integration with other enterprise-level data architecture and management services may exist, possibly with other Azure services and Power Platform products.

Guidelines for being successful with enterprise BI delivery:

* Governance and oversight techniques described in the [governance](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-governance) article are relevant for managing an enterprise BI solution. Techniques primarily include change management and application lifecycle management.
* Plan for how to effectively use [Premium Per User](https://docs.microsoft.com/en-us/power-bi/admin/service-premium-per-user-faq) or [Premium capacity](https://docs.microsoft.com/en-us/power-bi/admin/service-premium-what-is#subscriptions-and-licensing) licensing per workspace. Align your workspace management strategy, like how [workspaces](https://docs.microsoft.com/en-us/power-bi/collaborate-share/service-create-the-new-workspaces) will be organized and secured, to the planned [licensing](https://docs.microsoft.com/en-us/power-bi/admin/service-admin-licensing-organization) strategy.
* Plan how Power BI apps will distribute enterprise BI content. An app can provide a significantly better user experience for consuming content. Align the app distribution strategy with your workspace management strategy.
* Consider enforcing the use of [sensitivity labels](https://docs.microsoft.com/en-us/power-bi/admin/service-security-data-protection-overview) to implement information protection on all content.
* Implement a rigorous process for use of the [certified endorsement](https://docs.microsoft.com/en-us/power-bi/collaborate-share/service-endorse-content#certify-content) for enterprise BI reports and apps. Datasets and dataflows can be certified, too, when there's the expectation that self-service creators will build solutions based on them. Not all enterprise BI content needs to be certified, but much of it probably will be.
* Make it a common practice to announce when changes will occur. For more information, see the [community of practice](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-community-of-practice) article for a description of communication types.
* Include consistent branding on reports to align with departmental colors and styling. It can also indicate who produced the content. For more information, see the [Content ownership and management](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-content-ownership-and-management) article. A small image or text label in the report footer is valuable when the report is exported from the Power BI service. A standard Power BI Desktop template file can encourage and simplify the consistent use of branding. For more information, see the [Mentoring and user enablement](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-mentoring-and-user-enablement) article.
* Use the [lineage view](https://docs.microsoft.com/en-us/power-bi/collaborate-share/service-data-lineage) to understand dependencies, perform impact analysis, and communicate to downstream content owners when changes will occur.
* See the techniques described for enterprise BI in the [content ownership and management](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-content-ownership-and-management) article. They are highly relevant techniques that help content creators create efficient and effective enterprise BI solutions.
* See the techniques described in the [system oversight](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-system-oversight) article for auditing, governing, and the oversight of enterprise BI content.

## Considerations and key actions

Considerations and key actions you can take to strengthen your approach to content delivery:

* Ensure that guidelines, documentation, and other resources align with the strategic goals defined for Power BI adoption.
* Clarify the scopes for content delivery in your organization, who they apply to, and how they align with governance decisions. Ensure it's consistent with how [content ownership and management](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-content-ownership-and-management) is handled.
* Consider how to handle situations when a smaller team wants to publish content for an enterprise-wide audience.
	+ Will it require the content be owned and managed by a centralized team? For more information, see the [content ownership and management](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-content-ownership-and-management) article, which describes an inter-related concept with content delivery scope.
	+ Will there be an approval process? Governance can become more complicated when the content delivery scope is broader than the owner of the content. For example, an app owned by a divisional sales team is distributed to the entire organization.
* Create helpful documentation for your community so content creators understand when it's appropriate to use [workspaces](https://docs.microsoft.com/en-us/power-bi/collaborate-share/service-create-the-new-workspaces), [apps](https://docs.microsoft.com/en-us/power-bi/collaborate-share/service-create-distribute-apps), or [sharing (direct access or link sharing)](https://powerbi.microsoft.com/blog/announcing-the-new-sharing-experience/).
* Ensure you have a specific strategy in place to handle user licensing considerations for [Power BI Pro](https://docs.microsoft.com/en-us/power-bi/admin/service-admin-purchasing-power-bi-pro), [Premium Per User](https://docs.microsoft.com/en-us/power-bi/admin/service-premium-per-user-faq), and [Premium capacity](https://docs.microsoft.com/en-us/power-bi/admin/service-premium-what-is#subscriptions-and-licensing). Create a process for how workspaces may be assigned each license type, and the prerequisites required for the type of content that may be assigned to Premium.

## Maturity levels

The following maturity levels will help you assess the current state of your content delivery:

|  |  |
| --- | --- |
| **Level** | **State of Power BI content delivery** |
| 100: Initial | Content is published by self-service creators in an uncontrolled way, without a specific strategy. |
| 200: Repeatable | Pockets of good practices exist which depend on the knowledge, skills, and habits of the content creator. |
| 300: Defined | Clear guidelines are defined and communicated to describe what can and cannot occur within each delivery scope. These guidelines are followed by some—but not all—groups across the organization. |
| 400: Capable | Criteria are defined to align governance requirements for self-service versus enterprise content.Guidelines are followed by most, or all, groups across the organization.Change management requirements are in place to approve critical changes to content that is distributed to a larger audience.Changes are announced so creators are aware of the downstream effects on their content. |
| 500: Efficient | Proactively communicate with a user when any concerning activities are detected in the activity log.Analysis is conducted regularly to evaluate the business value that's achieved for deployed solutions. |

# Center of Excellence

A Power BI Center of Excellence (COE) is an internal team of technical and business experts. The team actively assists others within the organization who are working with data. The COE forms the nucleus of the broader community to advance adoption goals, which align with the data culture vision.

A COE might also be known as business intelligence (BI) competency center, capability center, or a center of expertise. Some organizations use the term squad. Many organizations perform the COE responsibilities within their BI team or analytics team.

**Note**Having a COE team formally recognized in your organizational chart is recommended, but not required. What's most important is that the COE roles and responsibilities are identified, prioritized, and assigned. It's common for a centralized BI or analytics team to take on many of the COE responsibilities; some responsibilities may also reside within IT. For simplicity, in this series of articles, COE means a specific group of people, although you may implement it differently. It's also very common to implement the COE with a scope broader than Power BI alone: for instance, a Power Platform COE or an analytics COE.

## Goals for a COE

Goals for a COE include:

* Evangelizing a data-driven culture.
* Promoting the adoption of Power BI.
* Nurturing, mentoring, guiding, and educating internal users to increase their skills and level of self-reliance.
* Coordinating efforts and disseminating knowledge across organizational boundaries.
* Creating consistency and transparency for the user community, which reduces friction and pain points related to finding relevant data and analytics content.
* Maximizing the benefits of self-service BI, while reducing the risks.
* Reducing technical debt by helping make good decisions that increase consistency and result in fewer inefficiencies.

**Important**One of the most powerful aspects of a COE is the cross-departmental insight into how Power BI is used by the organization. This insight can reveal which practices work well and which don't, that can facilitate a bottom-up approach to governance. A primary goal of the COE is to learn which practices work well, share that knowledge more broadly, and replicate best practices across the organization.

## Scope of COE responsibilities

The scope of COE responsibilities can vary significantly between organizations. In a way, a COE can be thought of as a consultancy service because its members routinely provide expert advice to others. To varying degrees, most COEs handle hands-on work too.

Common COE responsibilities include:

* Mentoring the internal Power BI community. For more information, see the [Community of practice](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-community-of-practice) article.
* Producing, curating, and promoting training materials. For more information, see the [Mentoring and user enablement](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-mentoring-and-user-enablement) article.
* Creating documentation and resources to encourage consistent use of standards and best practices. For more information, see the [Mentoring and user enablement](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-mentoring-and-user-enablement) article.
* Applying, communicating, and assisting with governance guidelines. For more information, see the [Governance](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-governance) article.
* Handling and assisting with system oversight and administration. For more information, see the [System oversight](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-system-oversight) article.
* Responding to user support issues escalated from the help desk. For more information, see the [User support](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-user-support) article.
* Developing solutions and/or proofs of concept.
* Establishing and maintaining the BI platform and data architecture.

## Staffing a COE

People who are good candidates as COE members tend to be those who:

* Understand the analytics vision for the organization.
* Have a desire to continually improve analytics practices for the organization.
* Have a deep interest in, and expertise with, Power BI.
* Are interested in seeing Power BI used effectively and adopted successfully throughout the organization.
* Take the initiative to continually learn, adapt, and grow.
* Readily share their knowledge with others.
* Are interested in repeatable processes, standardization, and governance with a focus on user enablement.
* Are hyper-focused on collaboration with others.
* Are comfortable working in an agile fashion.
* Have an inherent interest in being involved and helping others.
* Can effectively translate business needs into solutions.
* Communicate well with both technical and business colleagues.

**Tip**If you have Power BI creators in your organization who constantly push the boundaries of what can be done, they might be a great candidate to become a recognized [**champion**](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-community-of-practice#rewarding-champions), or perhaps even a member of the COE.

When recruiting for the COE, it's important to have a mix of complementary analytical skills, technical skills, and business skills.

## Roles and responsibilities

Very generalized roles within a COE are listed below. It's common for multiple people to overlap roles, which is useful from a backup and cross-training perspective. It's also common for the same person to serve multiple roles. For instance, most COE members serve also as a coach or mentor.

|  |  |
| --- | --- |
| **Role** | **Description** |
| COE leader | Manages the day-to-day operations of the COE. Interacts with the executive sponsor and other organizational teams, such as the data governance board, as necessary. For details of additional roles and responsibilities, see the [Governance](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-governance#roles-and-responsibilities) article. |
| Coach | Coaches and educates others on BI skills via office hours (community engagement), best practices reviews, or co-development projects. Oversees and participates in the discussion channel of the internal community. Interacts with, and supports, the champions network. |
| Trainer | Develops, curates, and delivers internal training materials, documentation, and resources. |
| Data analyst | Domain-specific subject matter expert. Acts as a liaison between the COE and the business unit. Content creator for the business unit. Assists with content certification. Works on co-development projects and proofs of concept. |
| Data modeler | Creates and manages shared datasets and dataflows to support self-service content creators. |
| Report creator | Creates and publishes reports and dashboards. |
| Data engineer | Plans Power BI deployment and architecture, including integration with Azure services and other data platforms. Publishes data assets which are utilized broadly across the organization. |
| User support | Assists with the resolution of data discrepancies and escalated help desk support issues. |

As mentioned previously, the scope of responsibilities for a COE can vary. Therefore, the roles found for COE members can vary too.

## Structuring a COE

The selected COE structure can vary among organizations. The four most common ways you can structure the COE are: centralized, unified, federated, or decentralized. Additional variations exist too.

**Note**The following terms may differ to those defined for your organization, particularly the meaning of federated, which tends to have many different IT-related meanings.

### Centralized COE

A centralized COE is comprised of a single shared services team.

**Pros:**

* There's a single point of accountability for a single team that manages standards, best practices, and delivery end-to-end.
* The COE is one group from an organizational chart perspective.
* It's easy to start with this approach and then evolve to the unified or federated model over time.

**Cons:**

* A centralized team might have an authoritarian tendency to favor one-size-fits-all decisions that don't always work well for all business units.
* There can be a tendency to prefer IT skills over business skills.
* Due to the centralized nature, it may be more difficult for the COE members to sufficiently understand the needs of all business units.

### Unified COE

A unified COE is a single, centralized, shared services team that has been expanded to include embedded team members. The embedded team members are dedicated to supporting a specific functional area or business unit.

**Pros:**

* There's a single point of accountability for a single team that includes cross-functional involvement from the embedded COE team members. The embedded COE team members are assigned to various areas of the business.
* The COE is one group from an organizational chart perspective.
* The COE understands the needs of business units more deeply due to dedicated members with domain expertise.

**Cons:**

* The embedded COE team members, who are dedicated to a specific business unit, have a different organizational chart responsibility than the people they serve directly within the business unit. It may potentially lead to complications, differences in priorities, or necessitate the involvement of the executive sponsor. Preferably, the executive sponsor has a scope of authority that includes the COE and all involved business units to help resolve conflicts.

### Federated COE

A federated COE comprises a shared services team plus satellite members from each functional area or major business unit. A federated team works in coordination, even though its members reside in different business units. Typically, satellite members are primarily focused on development activities to support their business unit while the shared services personnel support the entire community.

**Pros:**

* There's cross-functional involvement from satellite COE members who represent their specific functional area and have domain expertise.
* There's a balance of centralized and decentralized representation across the core and satellite COE members.
* When distributed data ownership situations exist—as could be the case when business units take direct responsibility for data management activities—this model is effective.

**Cons:**

* Since core and satellite members span organizational boundaries, the federated COE approach requires strong leadership, excellent communication, robust project management, and ultra-clear expectations.
* There's a higher risk of encountering competing priorities due to the federated structure.
* This approach typically involves part-time people and/or dotted line organizational chart accountability that can introduce competing time pressures.

### Decentralized COE

Decentralized COEs are independently managed by business units.

**Pros:**

* A specialized data culture exists that's focused on the business unit, making it easier to learn quickly and adapt.
* Policies and practices are tailored to each business unit.
* Agility, flexibility, and priorities are focused on the individual business unit.

**Cons:**

* There's a risk that decentralized COEs operate in isolation. As a result, they might not share best practices and lessons learned outside of their business unit.
* Collaboration with a centralized team may be informal and/or inconsistent.
* Inconsistent policies are created and applied across business units.
* It's difficult to scale a decentralized model.
* There's potential rework to bring one or more decentralized COEs in alignment with organizational-wide policies.
* Larger business units with significant funding may have more resources available to them, which may not serve cost optimization goals from an organizational-wide perspective.

**Important**A highly centralized COE tends to be more authoritarian, while highly decentralized COEs tend to be more siloed. Each organization will need to weigh the pros and cons that apply to them to determine the best choice. For most organizations, the most effective approach tends to be the unified or federated, which bridges organizational boundaries.

## Funding the COE

The COE may obtain its operating budget in multiple ways:

* Cost center.
* Profit center with project budget(s).
* A combination of cost center and profit center.

When the COE operates as a cost center, it absorbs the operating costs. Generally, it involves an approved annual budget. Sometimes this is called a push engagement model.

When the COE operates as a profit center (for at least part of its budget), it could accept projects throughout the year based on funding from other business units. Sometimes this is called a pull engagement model.

Funding is important because it impacts the way the COE communicates and engages with the internal community. As the COE experiences more and more successes, they may receive more requests from business units for help. It's especially the case as awareness grows throughout the organization.

**Tip**The choice of funding model can determine how the COE actively grows its influence and ability to help. The funding model can also have a big impact on where authority resides and how decision-making works. Further, it impacts the types of services a COE can offer, such as co-development projects and/or best practices reviews. For more information, see the [**Mentoring and user enablement**](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-mentoring-and-user-enablement) article.

Some organizations cover the COE operating costs with chargebacks to business units based on the usage metrics of Power BI. For a Power BI shared capacity, this could be based on number of active users. For Premium capacity, chargebacks could be allocated based on which business units are using the capacity. Ideally, chargebacks are directly correlated to the business value gained.

## Considerations and key actions

Considerations and key actions you can take to establish or improve your Power BI COE:

* Define the scope of responsibilities for the COE. Once the scope is known, identify the skills and competencies required to fulfill those responsibilities.
* Analyze whether the COE has the required systems and infrastructure in place to meet its goals and scope of responsibilities.
* Determine what COE structure is most appropriate (centralized, unified, federated, or decentralized). Verify that staffing, roles and responsibilities, and appropriate organizational chart relationships (HR reporting) are in place.
* Identify the internal customers, and any external customers, to be served by the COE. Identify how the COE will generally engage with those customers (push model, pull model, or both).
* If you're starting out with a centralized or decentralized COE, consider how you will scale the COE over time with the unified or federated approach. Plan for any actions to take now that will facilitate future growth.
* Verify the funding plan for the COE. Decide whether the COE is purely a cost center with an operating budget, whether it will operate partially as a profit center, and/or whether chargebacks to other business units will be required.
* Create a [communications strategy](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-governance#governance-planning) to educate the Power BI community about the services the COE offers, and how to engage with the COE.

## Maturity levels

The following maturity levels will help you assess the current state of your COE:

|  |  |
| --- | --- |
| **Level** | **State of Power BI Center of Excellence** |
| 100: Initial | One or more COEs exist, or the activities are performed within the BI team or IT. There's no clarity on the specific goals nor expectations for responsibilities.Requests for assistance from the COE are handled in an unplanned manner. |
| 200: Repeatable | The COE is in place with a specific charter to mentor, guide, and educate self-service users. The COE seeks to maximize benefits of self-service BI while reducing the risks.Goals, scope, staffing, structure, and funding are established for the COE. |
| 300: Defined | The COE operates with active involvement from all business units in a unified or federated mode. |
| 400: Capable | The goals of the COE align with organizational goals, and they are reassessed regularly.The COE is well-known throughout the organization, and consistently proves its value to the internal user community. |
| 500: Efficient | Regular reviews of key performance indicators evaluate COE effectiveness.Agility and implementing continual improvements from lessons learned are top priorities for the COE. |

# Governance

Data governance is a broad and complex topic. This article introduces key concepts and considerations. It identifies important actions to take when adopting Power BI, but it's not a comprehensive reference for data governance.

As defined by the [Data Governance Institute](https://datagovernance.com/the-data-governance-basics/definitions-of-data-governance/), data governance is "a system of decision rights and accountabilities for information-related processes, executed according to agreed-upon models which describe who can take what actions, with what information, and when, under what circumstances, using what methods."

Although it is called data governance it's really a misnomer. The primary focus for governance isn't on the data itself, but on governing what people do with the data. Put another way: the true focus is on governing people's behavior to ensure organizational data is well-managed.

When focused on self-service business intelligence, the primary goals of governance are to:

* Empower the internal user community to be productive and efficient.
* Comply with the organization's industry, governmental, and contractual regulations.
* Adhere to the organization's internal requirements.

The optimal balance between control and empowerment will differ between organizations. It's also likely to differ among different business units within an organization. With a platform like Power BI, you'll be most successful when you put as much emphasis on user empowerment as on clarifying its practical usage within established guardrails.

**Tip**Think of governance as a set of established guidelines and formalized policies. All governance guidelines and policies should align with your organizational [**data culture**](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-governance) and adoption objectives. Governance is enacted on a day-to-day basis by your [**system oversight**](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-system-oversight) (administration) activities.

## Governance strategy

When considering data governance in any organization, the best place to start is by defining a governance strategy. By focusing first on the strategic goals for data governance, all detailed decisions when implementing governance policies and processes can be informed by the strategy. In turn, the governance strategy will be defined by the organization's [data culture](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-data-culture).

Governance decisions are implemented with documented guidance, policies, and processes. Objectives for governance of a BI platform such as Power BI include:

* Empowering people throughout the organization to use data and make decisions, within the defined boundaries.
* Ensuring that the data usage is appropriate for the needs of the business.
* Ensuring that data ownership and stewardship responsibilities are clear. For more information, see the [Content ownership and management](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-content-ownership-and-management) article.
* Improving the user experience by providing clear and transparent guidance (with minimal friction) on what actions are permitted, why, and how.
* Enhancing the consistency and standardization of working with data across organizational boundaries.
* Reducing risk of data leakage and misuse of data. For more information, see the [System oversight](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-system-oversight) article.
* Meeting regulatory, industry, and internal requirements for the proper use of data.

**Tip**A well-executed data governance strategy makes it easier for more users to work with data. When governance is approached from the perspective of user empowerment, users are more likely to follow the documented processes. Accordingly, the users become a trusted partner too.

## Governance success factors

Governance is not well-received when it's enacted with top-down mandates that are focused more on control than empowerment. Governing Power BI is most successful when:

* The most lightweight governance model that accomplishes required objectives is used.
* Governance is approached on an iterative basis and doesn't significantly impede productivity.
* A bottom-up approach to formulating governance guidelines is used whenever practical. The Center of Excellence (COE) and/or the data governance team observes successful behaviors that are occurring, and then takes action to formalize and scale out those methods based on lessons learned.
* Governance decisions are co-defined with input from different business units before they're enacted. Although there are times when a specific directive is necessary (particularly in heavily regulated industries), mandates should be the exception rather than the rule.
* Governance needs are balanced with flexibility and the ability to be productive.
* Governance requirements can be satisfied as part of users' regular workflow, making it easier for people to do the right thing in the right way with little friction.
* The answer to new requests for data is not "no" by default, but rather "yes and" with clear, simple, transparent rules for what governance requirements are for data access, usage, and sharing.
* Users that need access to data have incentive to do so through normal channels, complying with governance requirements, rather than circumventing them.
* Governance decisions, policies, and requirements for users to follow are in alignment with organizational data culture goals as well as other existing data governance initiatives.
* Decisions that affect what users and creators can—and cannot—do are not made solely by an administrator or in isolation.

## Introducing governance to your organization

There are three primary timing methods organizations take when introducing Power BI governance to an organization.



The methods in the above diagram include:

|  |  |
| --- | --- |
| **Method** | **Strategy followed** |
| Method 1. | **Roll out Power BI first, then introduce governance:** Power BI is made widely available to users in the organization as a new self-service BI tool. Then, at some time in the future, a governance effort begins. This method prioritizes agility. |
| Method 2. | **Full governance planning first, then roll out Power BI:** Extensive governance planning occurs prior to permitting users to begin using Power BI. This method prioritizes control and stability. |
| Method 3. | **Iterative governance planning with rollouts of Power BI in stages:** Just enough governance planning occurs initially. Then Power BI is iteratively rolled out in stages to individual teams while iterative governance enhancements occur. This method equally prioritizes agility and governance. |

Choose Method 1 when Power BI is already used for self-service scenarios, and you are ready to start working in a more efficient manner.

Choose Method 2 when your organization already has a well-established approach to governance that can be readily expanded to include Power BI.

Choose Method 3 when you want to provide the greatest degree of flexibility and agility. This balanced approach is the best choice for most organizations and most scenarios.

### Method 1: Roll out Power BI first

Method 1 prioritizes agility and speed. It allows users to quickly get started creating solutions. This method occurs when Power BI has been made widely available to users in the organization as a new self-service BI tool. Quick wins and some successes are achieved. At some point in the future, a governance effort begins, usually to bring order to an unacceptable level of chaos since the self-service user population didn't receive sufficient guidance.

**Pros:**

* Fastest to get started.
* Highly capable users can get things done quickly.
* Quick wins are achieved.

**Cons:**

* Higher effort to establish governance once Power BI is used prevalently throughout the organization.
* Resistance from self-service users who are asked to change what they've been doing.
* In the absence of a strategic plan, self-service users are required to figure out things on their own.

See other possible cons in the [Governance challenges](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-governance#governance-challenges) section below.

### Method 2: In-depth governance planning first

Method 2 prioritizes control and stability. It lies at the opposite end of the spectrum from method 1. Method 2 involves doing extensive governance planning before rolling out Power BI. This situation is most likely to occur when the implementation of Power BI is led by IT. It is also likely to occur when the organization operates in a highly-regulated industry, or when an existing data governance board exists that imposes significant prerequisites and requirements.

**Pros:**

* More fully prepared to meet regulatory requirements.
* More fully prepared to support the user community.

**Cons:**

* Favors enterprise BI more than self-service BI.
* Slower to allow the user population to begin to get value and improve decision-making.
* Encourages poor habits and workarounds when there's a significant delay in allowing the use of data for decision-making.

### Method 3: Iterative governance with rollouts

Method 3 seeks a balance between agility and governance. It's an ideal scenario that does just enough governance planning upfront. Frequent and continual governance improvements iteratively occur over time alongside Power BI development projects that deliver value.

**Pros:**

* Puts equal priority on governance and user productivity.
* Emphasizes a learning as you go mentality.
* Encourages rolling out to groups in stages.

**Cons:**

* Requires a high level of communication to be successful with agile governance practices.
* This level of agility requires additional discipline to keep documentation and training current.
* Introducing new governance guidelines and policies too often causes a certain level of user disruption.

For more information about up-front planning, see the [Preparing to migrate to Power BI](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-migration-pre-migration-steps) article.

## Governance challenges

If your organization has implemented Power BI without a governance approach or strategic direction (as described above by Method 1), there could be numerous challenges requiring attention. Depending on the approach you've taken and your current state, some of the following challenges may be applicable to your organization.

### Strategy challenges

* Lack of a cohesive data governance strategy that aligns with the business strategy.
* Lack of executive support for governing data as a strategic asset.
* Insufficient adoption planning for advancing adoption and the maturity level of BI and analytics.

### People challenges

* Lack of aligned priorities between centralized teams and business units.
* Lack of identified champions with sufficient expertise and enthusiasm throughout the business units to advance organizational adoption objectives.
* Lack of awareness of self-service best practices.
* Resistance to following newly introduced governance guidelines and policies.
* Duplicate effort spent across business units.
* Lack of clear accountability, roles, and responsibilities.

### Process challenges

* Lack of clearly defined processes resulting in chaos and inconsistencies.
* Lack of standardization or repeatability.
* Insufficient ability to communicate and share lessons learned.
* Lack of documentation and over-reliance on tribal knowledge.
* Inability to comply with security and privacy requirements.

### Data quality and data management challenges

* Sprawl of data and reports.
* Inaccurate, incomplete, or outdated data.
* Lack of trust in the data, especially for self-service content.
* Inconsistent reports produced without data validation.
* Valuable data not used or difficult to access.
* Fragmented, siloed, and duplicated datasets.
* Lack of data catalog, inventory, glossary, or lineage.
* Unclear data ownership and stewardship.

### Skills and data literacy challenges

* Varying levels of ability to interpret, create, and communicate with data effectively.
* Varying levels of technical skillsets and skill gaps.
* Lack of ability to confidently manage data diversity and volume.
* Underestimating the level of complexity for BI solution development and management throughout its entire lifecycle.
* Short tenure with continual staff transfers and turnover.
* Coping with the speed of change for cloud services.

**Tip**Identifying your current challenges—as well as your strengths—is essential to do proper governance planning. There's no single straightforward solution to the challenges listed above. Each organization needs to find the right balance and approach that solves the challenges that are most important to them. The challenges presented above will help you identify how they may affect your organization, so you can start thinking about what the right solution is for your circumstances.

## Governance planning

For organizations that have implemented Power BI without a governance approach or strategic direction (as described above by Method 1), the effort to begin governance planning can be daunting.

If a formal governance body doesn't currently exist in your organization, then the focus of your governance planning and implementation efforts will be broader. If, however, there is an existing data governance board in the organization, then your focus is primarily to integrate with existing practices and customize them to accommodate the objectives for self-service BI and enterprise BI.

**Important**Governance is a big undertaking, and it's never completely done. Relentlessly prioritizing and iterating on improvements will make the scope more manageable. If you track your progress and accomplishments each week and each month, you'll be amazed at the impact over time. The [**maturity levels**](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-governance#maturity-levels) at the end of each article in this series can help with your assessment.

Some potential governance planning activities and outputs that you may find valuable are described next.

### Strategy

**Key activities:**

* Assess current state of data culture, adoption, and BI practices.
* Conduct a series of information gathering sessions to define the desired future state, strategic vision, priorities, and objectives for data culture, adoption, and BI practices. Be sure to include adoption goals for Power BI as suggested in the [Power BI adoption framework series](https://www.youtube.com/playlist?list=PL1N57mwBHtN0UZbEgLHtA1yxqPlae3B90). They are a useful approach if you don't already have a structured method for information gathering.
* Validate the focus and scope of the governance program.
* Identify existing bottom-up initiatives in progress.
* Identify immediate pain points, issues, and risks.
* Educate senior leadership about governance, and ensure executive support is sufficient to sustain and grow the program.
* Clarify where Power BI fits in to the overall data and analytics strategy for the organization.
* Assess internal factors such as organizational readiness, maturity levels, and key challenges.
* Assess external factors such as risk, exposure, regulatory, and legal requirements—including regional differences.

**Key output:**

* Business case with cost/benefit analysis.
* Approved governance objectives, focus, and priorities that are in alignment with high-level business objectives.
* Plan for short-term goals and priorities. These are quick wins.
* Plan for long-term and deferred goals and priorities.
* Success criteria and measurable key performance indicators (KPIs).
* Known risks documented with a mitigation plan.
* Plan for meeting industry, governmental, contractual, and regulatory requirements that impact BI and analytics in the organization.
* Funding plan.

### People

**Key activities:**

* Establish a governance board and identify key stakeholders.
* Determine focus, scope, and a set of responsibilities for the governance board.
* Establish a COE.
* Determine focus, scope, and a set of responsibilities for COE.
* Define roles and responsibilities.
* Confirm who has decision-making, approval, and veto authority.

**Key output:**

* Charter for the governance board.
* Charter for the COE.
* Staffing plan.
* Roles and responsibilities.
* Accountability and decision-making matrix.
* Communication plan.
* Issue management plan.

### Policies and processes

**Key activities:**

* Analyze immediate pain points, issues, risks, and areas to improve the user experience.
* Prioritize data policies to be addressed by order of importance.
* Identify existing processes in place that work well and can be formalized.
* Determine how new data policies will be socialized.
* Decide to what extent data policies may differ or be customized for different groups.

**Key output:**

* Process for how data policies and documentation will be defined, approved, communicated, and maintained.
* Plan for requesting valid exceptions and departures from documented policies.

### Project management

The implementation of the governance program should be planned and managed as a series of projects.

**Key activities:**

* Establish a timeline with priorities and milestones.
* Identify related initiatives and dependencies.
* Identify and coordinate with existing bottom-up initiatives.
* Create an iterative project plan that's aligned with high-level prioritization.
* Obtain budget approval and funding.
* Establish a tangible way to track progress.

**Key output:**

* Project plan with iterations, dependencies, and sequencing.
* Cadence for retrospectives with a focus on continual improvements.

**Important**The scope of activities listed above that will be useful to take on will vary considerably between organizations. If your organization doesn't have existing processes and workflows for creating these types of outputs, refer to the industry guidance found in the [**Roadmap conclusion article**](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-conclusion#industry-guidance) for some helpful resources.

## Governance policies

### Decision criteria

All governance decisions should be in alignment with the established goals for [organizational adoption](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-maturity-levels). Once the strategy is clear, more tactical governance decisions will need to be made which affect the day-to-day activities of the self-service user community. These types of tactical decisions correlate directly to the data policies that get created.

How we go about making governance decisions depends on:

* **Who owns and manages the BI content?** The [Content ownership and management](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-content-ownership-and-management) article introduced three types of strategies: business-led self-service BI, managed self-service BI, and enterprise BI. Who owns and manages the content has a significant impact on governance requirements.
* **What is the scope for delivery of the BI content?** The [Content delivery scope](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-content-delivery-scope) article introduced four scopes for delivery of content: personal BI, team BI, departmental BI, and enterprise BI. The scope of delivery has a considerable impact on governance requirements.
* **What is the data subject area?** The data itself, including its sensitivity level, is an important factor. Some data domains inherently require tighter controls. For instance, personally identifiable information (PII), or data subject to regulations, should be subject to stricter governance requirements than less sensitive data.
* **Is the data, and/or the BI solution, considered critical?** If you can't make an informed decision easily without this data, you're dealing with critical data elements. Certain reports and apps may be deemed critical because they meet a set of predefined criteria. For instance, the content is delivered to executives. Predefined criteria for what's considered critical helps everyone have clear expectations. Critical data is usually subject to stricter governance requirements.

**Tip**Different combinations of the above four criteria will result in different governance requirements for Power BI content.

### Key Power BI governance decisions

As you explore your goals and objectives and pursue more tactical data governance decisions as described above, it will be important to determine what the highest priorities are. Deciding where to focus your efforts can be challenging.

The following list includes items that you may choose to prioritize when introducing governance for Power BI:

* Recommendations and requirements for [content ownership and ownership](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-content-ownership-and-management).
* Recommendations and requirements for [content delivery scope](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-content-delivery-scope).
* Recommendations and requirements for content [distribution and sharing](https://docs.microsoft.com/en-us/power-bi/collaborate-share/service-how-to-collaborate-distribute-dashboards-reports) with colleagues, as well as for [external users](https://docs.microsoft.com/en-us/power-bi/admin/service-admin-azure-ad-b2b), such as customers, partners, or vendors.
* Allowed activities with regulated data and highly sensitive data.
* Allowed use of unverified data sources that are unknown to IT and/or recommendations for manually maintained data sources.
* How to manage [workspaces](https://docs.microsoft.com/en-us/power-bi/collaborate-share/service-create-the-new-workspaces) effectively.
* Who is allowed to be a [Power BI administrator](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-system-oversight).
* [Security](https://docs.microsoft.com/en-us/power-bi/admin/service-admin-power-bi-security), privacy, and data protection requirements, and allowed actions for data artifacts assigned to each [sensitivity label](https://docs.microsoft.com/en-us/power-bi/admin/service-security-apply-data-sensitivity-labels).
* Allowed or encouraged use of [personal gateways](https://docs.microsoft.com/en-us/power-bi/connect-data/service-gateway-personal-mode).
* Allowed or encouraged use of [self-service purchasing](https://docs.microsoft.com/en-us/microsoft-365/commerce/subscriptions/self-service-purchase-faq?view=o365-worldwide&preserve-view=true) of user licenses.
* Requirements for who may [certify](https://docs.microsoft.com/en-us/power-bi/collaborate-share/service-endorse-content) data artifacts, as well as requirements which must be met.
* Application lifecycle management for managing content through its entire lifecycle, including [development, test, and production stages](https://docs.microsoft.com/en-us/power-bi/create-reports/deployment-pipelines-overview).
* Additional requirements applicable to critical content, such as data quality verifications and documentation.
* Requirements to use standardized master data and common data to ensure consistency.
* Recommendations and requirements for use of [external tools](https://docs.microsoft.com/en-us/power-bi/transform-model/desktop-external-tools).

If you don't make governance decisions and communicate them well, people will use their own judgment for how things should work—and that often results in inconsistent approaches to common tasks. Although not every governance decision needs to be made upfront, it's important that you identify the areas of greatest risk in your organization. Then, incrementally implement governance policies and processes that will deliver the most impact.

### Data policies

A data policy is a document that defines what users can and cannot do. You may call it something different, but the goal remains the same: when decisions—such as those discussed in the previous section—are made, they are documented for use and reference by the community of users.

A data policy should be as short as possible. That way, it's easy for people to understand what is being asked of them. A data policy should include:

* Policy name, purpose, description, and details.
* Specific responsibilities.
* Scope of the policy (organization-wide versus departmental-specific).
* Audience for the policy.
* Policy owner, approver, and contact.
* How to request an exception.
* How the policy will be audited and enforced.
* Regulatory or legal requirements met by the policy.
* Reference to terminology definitions.
* Reference to any related guidelines or policies.
* Effective date, last revision date, and change log.

**Note**Locate, or link to, data policies from your [**centralized portal**](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-mentoring-and-user-enablement#centralized-portal).

Here are three common data policy examples you may choose to prioritize:

|  |  |
| --- | --- |
| **Policy** | **Description** |
| Data ownership policy | Specifies when an owner is required for a data artifact, and what the data owner's responsibilities include, such as: supporting colleagues who view the content, maintaining appropriate confidentiality and security, and ensuring compliance. |
| Data certification (endorsement) policy | Specifies the process that is followed to certify a data artifact. Requirements may include activities such as: data accuracy validation, data source and lineage review, technical review of the data model, security review, and documentation review. |
| Data classification and protection policy | Specifies activities that are allowed and not allowed per classification (sensitivity level). It should align with data protection policies that are discussed in the [System oversight](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-system-oversight) article. It should specify activities such as: allowed sharing with external users (with or without NDA), encryption requirements, and ability to download the data artifact. Sometimes, it is also called a data handling policy or a data usage policy. |

**Caution**Having a lot of documentation can lead to a false sense that everything is under control, which can lead to complacency. The level of engagement that the [**COE**](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-center-of-excellence) has with the user community is one way to ensure that governance guidelines and policies are followed. Auditing and monitoring activities are also important. For information about these activities, see the [**System oversight**](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-system-oversight) article.

### Scope of policies

Governance decisions will rarely be one-size-fits-all across the entire organization. When practical, it's wise to start with standardized policies and then implement exceptions as needed. Having a clearly defined strategy for how policies will be handled for centralized and decentralized teams will make it much easier to determine how to handle exceptions.

**Pros of organization-wide policies:**

* Much easier to manage and maintain.
* Greater consistency.
* Encompasses more use cases.
* Fewer policies overall.

**Cons of organization-wide policies:**

* Inflexible.
* Less autonomy and empowerment.

**Pros of departmental-scope policies:**

* Expectations are clearer when tailored to a specific group.
* Customizable and flexible.

**Cons of departmental-scope policies:**

* More work to manage.
* More policies which are siloed.
* Potential for conflicting information.
* Difficult to scale.

**Tip**Finding the right balance of standardization and customization for supporting self-service BI across the organization can be challenging. However, by starting with organizational policies and mindfully watching for exceptions, you can make meaningful progress quickly.

## Staffing and accountability

The organizational structure for data governance varies significantly between organizations. In larger organizations there may be a data governance office with dedicated staff. Some organizations have a data governance board, council, or steering committee with assigned members coming from different business units. Depending on the extent of the data governance body within the organization, there may be an executive team separate from a functional team of people.

**Important**Regardless of how the governance body is structured, it's important that there's a person or group with sufficient influence over data governance decisions. This person should have authority to enforce those decisions across organizational boundaries.

### Checks and balances

Governance accountability is about checks and balances.



The levels in the above diagram include:

|  |  |
| --- | --- |
| **Level** | **Description** |
| Level 1. | **Operational - Business units:** Level 1 is the foundation of a well-governed system, which includes people within the business units performing their work. Self-service BI creators have a lot of responsibility related to authoring, publishing, sharing, security, and data quality. Self-service BI consumers also have responsibilities for the proper use of data. |
| Level 2. | **Tactical - Supporting teams:** Level 2 includes several groups that support the efforts of the users in the business units. Supporting teams include the COE, enterprise BI, the data governance office, as well as other ancillary teams. Ancillary teams can include IT, security, HR, and legal. Groups, like a change control board, are included here as well. |
| Level 3. | **Tactical - Audit and compliance:** Level 3 includes internal audit, risk management, and compliance teams, which provide guidance to levels 1 and 2. They also provide enforcement when necessary. |
| Level 4. | **Strategic - Executive sponsor and steering committee:** The top level includes the executive-level oversight of strategy and priorities. This level handles any escalated issues that couldn't be solved at lower levels. Therefore, it's important to have people with sufficient authority to be able to make decisions when necessary. |

**Important**Everyone has a responsibility to adhere to policies for ensuring that organizational data is secure, protected, and well-managed as an organizational asset. Sometimes this is cited as everyone is a data steward. To make this a reality, start with the people in the business units (level 1 described above) as the foundation.

## Roles and responsibilities

Once you have a sense for your governance strategy, roles and responsibilities should be defined to establish clear expectations.

Governance team structure, roles (including terminology), and responsibilities vary widely among organizations. Very generalized roles are described below. In some cases, the same person may serve multiple roles. For instance, the Chief Data Officer (CDO) may also be the executive sponsor.

|  |  |
| --- | --- |
| **Role** | **Description** |
| Chief Data Officer or Chief Analytics Officer | Defines the strategy for use of data as an enterprise asset. Oversees enterprise-wide governance guidelines and policies. |
| Data governance board | Steering committee with members from each business unit who, as domain owners, are empowered to make enterprise governance decisions. They make decisions on behalf of the business unit and in the best interest of the organization. Provides approvals, decisions, priorities, and direction to the enterprise data governance team and working committees. |
| Data governance team | Creates governance policies, standards, and processes. Provides enterprise-wide oversight and optimization of data integrity, trustworthiness, privacy, and usability. Collaborates with the COE to provide governance education, support, and mentoring to data owners and content creators. |
| Data governance working committees | Temporary or permanent teams that focus on individual governance topics, such as security or data quality. |
| Change management board | Coordinates the requirements, processes, approvals, and scheduling for release management processes with the objective of reducing risk and minimizing the impact of changes to critical applications. |
| Project management office | Manages individual governance projects and the ongoing data governance program. |
| Power BI executive sponsor | Promotes adoption and the successful use of Power BI. Actively ensures that Power BI decisions are consistently aligned with business objectives, guiding principles, and policies across organizational boundaries. |
| Center of Excellence | Mentors the community of creators and consumers to promote the effective use of Power BI for decision-making. Provides cross-departmental coordination of Power BI activities to improve practices, increase consistency, and reduce inefficiencies. For more information, see the [Center of Excellence](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-center-of-excellence) article. |
| Power BI champions | A subset of content creators found within the business units who help advance the adoption of Power BI. They contribute to data culture growth by advocating the use of best practices and actively assisting colleagues. |
| Power BI administrators | Day-to-day-system oversight responsibilities to support the internal processes, tools, and people. Handles monitoring, auditing, and management. |
| Information technology | Provides occasional assistance to Power BI administrators for services related to Power BI, such as Azure Active Directory, Microsoft 365, Teams, SharePoint, or OneDrive. |
| Risk management | Reviews and assesses data sharing and security risks. Defines ethical data policies and standards. Communicates regulatory and legal requirements. |
| Internal audit | Auditing of compliance with regulatory and internal requirements. |
| Data steward | Collaborates with governance committee and/or COE to ensure that organizational data has acceptable data quality levels. |
| All BI creators and consumers | Adheres to policies for ensuring that data is secure, protected, and well-managed as an organizational asset. |

**Tip**Name a backup for each person in key roles, for example, members of the data governance board. In their absence, the backup person can attend meetings and make time-sensitive decisions when necessary.

## Considerations and key actions

Considerations and key actions you can take to establish or strengthen your governance initiatives:

* Confirm that the high-level goals and guiding principles of the data culture goals are clearly documented and communicated, to ensure that alignment exists for any new governance guidelines or policies.
* Ensure that you have a deep understanding of how Power BI is currently used for self-service BI and enterprise BI. Document opportunities for improvement. Also, document strengths and good practices that would be helpful to formalize.
* For prioritizing which new guidelines or policies to create, select an important pain point, high priority need, or known risk for a data domain. It should have significant benefit and can be achieved with a feasible level of effort. When implementing the first governance guidelines, choose something users are likely to support because the change is low impact, or because they are sufficiently motivated to make a change.
* Determine if there is an inventory of all critical data assets, or create one if necessary. You cannot govern what you don't know about.
* Confirm that you have support and sufficient attention from your [executive sponsor](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-executive-sponsorship), as well as from business unit leaders.
* Evaluate the existing processes and policies you can immediately adopt for Power BI for consistency. They could include guidance from an existing data governance board or an existing change management board.
* Determine the cadence for how often data policies are reevaluated.
* Determine how conflicts, issues, and requests for exceptions to documented policies will be handled.
* Prepare an action plan that includes:
	+ Initial priorities: Select one data domain or business unit at a time.
	+ Timeline: Work in iterations long enough to accomplish meaningful progress, yet short enough to periodically adjust.
	+ Quick wins: Focus on tangible, tactical, and incremental progress.
	+ Success metrics: Create measurable metrics to evaluate progress.

## Maturity levels

The following maturity levels will help you assess the current state of your governance initiatives:

|  |  |
| --- | --- |
| **Level** | **State of Power BI governance** |
| 100: Initial | Due to a lack of governance planning, the good data management and informal governance practices that are occurring are overly reliant on judgment and experience level of individuals.There's a significant reliance on undocumented tribal knowledge. |
| 200: Repeatable | Certain areas of the organization have made a purposeful effort to standardize, improve, and document their data management and governance practices. |
| 300: Defined | An approved plan with governance focus, objectives, and priorities is in place and broadly communicated.Roles and responsibilities are documented and understood.Governance guidelines and policies are implemented for the top few priorities (pain points or opportunities) and are actively followed by the COE and the community of users. |
| 400: Capable | Learnings from existing practices are continually enacted and scaled throughout the organization.It's clear where Power BI fits in to the overall BI strategy for the organization. |
| 500: Efficient | All Power BI governance priorities align with business objectives.Measurable governance goals are clear and tracked regularly for iterative, continual progress. Transparency and communication are a priority. |

# Mentoring and user enablement

A critical objective for adoption efforts is to enable users to accomplish as much as they can within the requisite guardrails established by [governance guidelines and policies](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-governance). For this reason, the act of mentoring users is one of the most important responsibilities of the [Center of Excellence](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-center-of-excellence) (COE), and it has a direct influence on how user adoption occurs. For more information about user adoption, see the [Power BI adoption maturity levels](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-maturity-levels#user-adoption-stages) article.

## Skills mentoring

Mentoring and helping users in the Power BI community become more effective can take on various forms, such as:

* Office hours.
* Co-development projects.
* Best practices reviews.
* Extended support.

### Office hours

Office hours are a form of ongoing community engagements managed by the COE. As the name implies, office hours are times of regularly scheduled availability where members of the community can engage with experts from the COE to receive assistance with minimal process overhead. Since office hours are group-based, Power BI champions and other members of the community can also pitch in to help solve an issue if a topic is in their area of expertise.

Office hours are a very popular and productive activity in many organizations. Some organizations call them drop-in hours or even a fun name such as Power Hour. The primary goal is usually to get questions answered and remove blockers. Office hours can also be used as a platform for the user community to share ideas, suggestions, and even complaints.

The COE publishes the times for regular office hours when one or more COE members are available. Ideally, office hours are held on a regular and frequent basis. For instance, it could be every Tuesday and Thursday. Consider offering different time slots or rotating times if you have a global workforce.

**Tip**One option is to set specific office hours each week. However, people may or may not show up, so that can end up being inefficient. Alternatively, consider leveraging [**Microsoft Bookings**](https://www.microsoft.com/microsoft-365/business/scheduling-and-booking-app) to schedule office hours. It shows the blocks of time when each COE expert is available, with Outlook integration ensuring availability is up to date.

Office hours are an excellent user enablement approach because:

* Content creators and the COE actively collaborate to answer questions and solve problems together.
* Real work is accomplished while learning and problem solving.
* Others may observe, learn, and participate.
* Individual groups can head to a breakout room to solve a specific problem.

Office hours benefit the COE as well because:

* They're a great way for the COE to identify champions or people with specific skills that the COE didn't previously know about.
* The COE can learn what people throughout the organization are struggling with. It helps inform whether additional resources, documentation, or training might be required.

**Tip**It's common for some tough issues to come up during office hours that cannot be solved quickly, such as getting a complex DAX calculation to work. Set clear expectations for what's in scope for office hours, and if there's any commitment for follow up.

### Co-development projects

One way the COE can provide mentoring services is during a co-development project. A co-development project is a form of assistance offered by the COE where a user or business unit takes advantage of the technical expertise of the COE to solve business problems with data. Co-development involves stakeholders from the business unit and the COE working in partnership to build a high-quality self-service BI solution that the business stakeholders could not deliver independently.

The goal of co-development is to help the business unit develop expertise over time while also delivering value. For example, the sales team has a pressing need to develop a new set of commission reports, but the sales team doesn't yet have the knowledge to complete it on their own.

A co-development project forms a partnership between the business unit and the COE. In this arrangement, the business unit is fully invested, deeply involved, and assumes ownership for the project.

Time involvement from the COE reduces over time until the business unit gains expertise and becomes self-reliant.



The active involvement shown in the above diagram changes over time, as follows:

* **Business unit:** 50% initially, up to 75%, finally at 98%-100%.
* **COE:** 50% initially, down to 25%, finally at 0%-2%.

Ideally, the period for the gradual reduction in involvement is identified up-front in the project. This way, both the business unit and the COE can sufficiently plan the timeline and staffing.

Co-development projects can deliver significant short- and long-term benefits. In the short term, the involvement from the COE can often result in a better-designed and better-performing solution that follows best practices and aligns with organizational standards. In the long term, co-development helps increase the knowledge and capabilities of the business stakeholder, making them more self-sufficient, and more confident to deliver quality self-service BI solutions in the future.

**Important**Essentially, a co-development project helps less experienced users learn the right way to do things. It reduces risk that refactoring might be needed later, and it increases the ability for a solution to scale and grow over time.

### Best practices reviews

The COE may also offer best practices reviews. A best practices review can be extremely helpful for content creators who would like to validate their work. They might also be known as advisory services, internal consulting time, or technical reviews.

During a review, an expert from the COE evaluates self-service Power BI content developed by a member of the community and identifies areas of risk or opportunities for improvement. The following bullet list presents some examples of when a best practices review could be beneficial:

* The sales team has an [app](https://docs.microsoft.com/en-us/power-bi/consumer/end-user-apps) that they intend to distribute to thousands of users throughout the organization. Since the app represents high priority content distributed to a large audience, they'd like to have it [certified](https://docs.microsoft.com/en-us/power-bi/collaborate-share/service-endorsement-overview). The standard process to certify content includes a best practices review.
* The finance team would like to [assign a workspace to Premium capacity](https://docs.microsoft.com/en-us/power-bi/admin/service-admin-premium-manage#assign-a-workspace-to-a-capacity). A review of the workspace content is required to ensure sound development practices were followed. This type of review is common when the capacity is shared among multiple business units. (A review may not be required when the capacity is assigned to only one business unit.)
* The operations team is creating a new solution they expect to be widely used. They would like to request a best practices review before it goes into user acceptance testing (UAT), or before a request is submitted to the change management board.

A best practices review is most often focused on the dataset design, though the review can encompass all types of artifacts (dataflows, datasets, reports, or apps).

Before content is deployed to the Power BI service, a best practices review may verify that:

* [Data sources](https://docs.microsoft.com/en-us/power-bi/connect-data/desktop-data-sources) used are appropriate and [query folding](https://docs.microsoft.com/en-us/power-bi/guidance/power-query-folding) is invoked whenever possible.
* [Connectivity mode](https://docs.microsoft.com/en-us/power-bi/connect-data/service-dataset-modes-understand) and [storage mode](https://docs.microsoft.com/en-us/power-bi/transform-model/desktop-storage-mode) choices (for example, import, live connection, DirectQuery composite model frameworks) are appropriate.
* Location for data sources, like flat files, and original Power BI Desktop files are suitable (preferably stored in a backed-up location with versioning and appropriate security, such as [Teams files or a SharePoint shared library](https://docs.microsoft.com/en-us/microsoft-365/community/should-i-store-my-files-in-teams-or-sharepoint-an-understanding-of-behind-the-scenes)).
* [Data preparation](https://docs.microsoft.com/en-us/power-bi/transform-model/desktop-query-overview) steps are clean, orderly, and [efficient](https://docs.microsoft.com/en-us/power-bi/guidance/power-query-folding).
* [Datasets](https://docs.microsoft.com/en-us/power-bi/connect-data/desktop-data-view) are well-designed, clean, and understandable (a [star schema](https://docs.microsoft.com/en-us/power-bi/guidance/star-schema) design is highly recommended).
* [Relationships](https://docs.microsoft.com/en-us/power-bi/transform-model/desktop-relationships-understand) are configured correctly.
* [DAX calculations](https://docs.microsoft.com/en-us/power-bi/transform-model/desktop-quickstart-learn-dax-basics) use efficient coding practices (particularly if the data model is large).
* The dataset size is within a reasonable limit and [data reduction techniques](https://docs.microsoft.com/en-us/power-bi/guidance/import-modeling-data-reduction) are applied.
* [Row-level security (RLS)](https://docs.microsoft.com/en-us/power-bi/guidance/rls-guidance) appropriately enforces data permissions.
* Data is accurate and has been validated against the authoritative source(s).
* Approved common definitions and terminology are used.
* Good [data visualization](https://powerbi.microsoft.com/data-visualization/) practices are followed, including [designing for accessibility](https://docs.microsoft.com/en-us/power-bi/create-reports/desktop-accessibility-creating-reports).

Once the content has been deployed to the Power BI service, the best practices review is not necessarily complete yet. Completing the remainder of the review may also include items such as:

* The target [workspace](https://docs.microsoft.com/en-us/power-bi/collaborate-share/service-create-the-new-workspaces) is suitable for the content.
* [Workspace security roles](https://docs.microsoft.com/en-us/power-bi/collaborate-share/service-new-workspaces#roles-in-the-new-workspaces) are appropriate for the content.
* Other permissions ([app permissions](https://docs.microsoft.com/en-us/power-bi/collaborate-share/service-create-distribute-apps#publish-your-app), [build permission](https://docs.microsoft.com/en-us/power-bi/connect-data/service-datasets-build-permissions), use of the [individual item sharing feature](https://docs.microsoft.com/en-us/power-bi/collaborate-share/service-share-dashboards)) are correctly and appropriately configured.
* [Contacts](https://docs.microsoft.com/en-us/power-bi/create-reports/service-item-contact) are identified, and correctly correlate to the [owners of the content](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-content-ownership-and-management).
* [Sensitivity labels](https://docs.microsoft.com/en-us/power-bi/admin/service-security-apply-data-sensitivity-labels) are correctly assigned.
* Artifact [endorsement](https://docs.microsoft.com/en-us/power-bi/collaborate-share/service-endorse-content) (certified or promoted) is appropriate.
* [Data refresh](https://docs.microsoft.com/en-us/power-bi/connect-data/refresh-data) is configured correctly, failure notifications include the proper users, and uses the appropriate [data gateway](https://docs.microsoft.com/en-us/connect-data/service-gateway-onprem.md) in standard mode (if applicable).
* All [best practices rules](https://powerbi.microsoft.com/blog/best-practice-rules-to-improve-your-models-performance-and-design-v1-1/) are followed and, preferably, are automated via a community tool called Best Practices Analyzer for maximum efficiency and productivity.

### Extended support

From time to time, the COE may get involved with complex issues escalated from the help desk. For more information, see the [User support](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-user-support) article.

**Note**Offering mentoring services might be a culture shift for your organization. Your reaction might be that users don't usually ask for help with a tool like Excel, so why would they with Power BI? The answer lies in the fact that Power BI is an extraordinarily powerful tool, providing data preparation and data modeling capabilities in addition to data visualization. The complexity of the tool inherently means that there's a significant learning curve to develop mastery. Having the ability to aid and enable users can significantly improve their skills and increase the quality of their solutions—it reduces risks too.

## Centralized portal

A single centralized portal, or hub, is where the user community can find:

* Access to the community Q&A forum.
* Announcements of interest to the community, such as new features and release plan updates.
* Schedules and registration links for office hours, lunch and learns, training sessions, and user group meetings.
* Announcements of key changes to data artifacts and change log (if appropriate).
* How to request help or support.
* Training materials.
* Documentation, onboarding materials, and frequently asked questions (FAQ).
* Governance guidance and approaches recommended by the COE.
* Templates.
* Recordings of knowledge sharing sessions.
* Entry points for accessing managed processes, such as license acquisition, access requests, and gateway configuration.

 **Tip**In general, only 10%-20% of your community will go out of their way to actively seek out training and educational information. These types of people might naturally evolve to become your Power BI champions. Everyone else is usually just trying to get the job done as quickly as possible because their time, focus, and energy are needed elsewhere. Therefore, it's important to make information easy for your community users to find.

The goal is to consistently direct users in the community to the centralized portal to find information. The corresponding obligation for the COE is to ensure that the information users need is available in the centralized portal. Keeping the portal updated requires discipline when everyone is busy.

In larger organizations, it may be difficult to implement one single centralized portal. When it's not practical to consolidate into a single portal, a centralized hub can serve as an aggregator, which contain links to the other locations.

 **Important**Although saving time finding information is important, the goal of a centralized portal is more than that. It's about making information readily available to help your user community do the right thing. They should be able to find information during their normal course of work, with as little friction as possible. Until it's easier to complete a task within the guardrails established by the COE and data governance team, some users will continue to complete their tasks by circumventing policies that are put in place. The recommended path must become the path of least resistance. Having a centralized portal can help achieve this goal.

It takes time for community users to think of the centralized portal as their natural first stop for finding information. It takes consistent redirection to the portal to change habits. Sending someone a link to an original document location in the portal builds better habits than, for instance, including the answer in an email response. It's the same challenge described in the [User support](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-user-support#community-documentation) article.

## Training

A key factor for successfully enabling users in a Power BI community is training. It is important that the right training resources are readily available and easily discoverable. While some users are so enthusiastic about Power BI that they'll find information and figure things out on their own, it isn't true for most of the user community.

Making sure your community users have access to the training resources they need to be successful doesn't mean that you need to develop your own training content. Developing training content is often counterproductive due to the rapidly evolving nature of the product. Fortunately, an abundance of training resources are available in the worldwide community. A curated set of links goes a long way to help users organize and focus their training efforts, especially for tool training, which focuses on the technology. All external links should be validated by the COE for accuracy and credibility. It's a key opportunity for the COE to add value because COE stakeholders are in an ideal position to understand the learning needs of the community, and to identify and locate trusted sources of quality learning materials.

You'll find the greatest return on investment with creating custom training materials for organizational-specific processes, while relying on content produced by others for everything else. It's also useful to have a short training class that focuses primarily on topics like how to find documentation, getting help, and interacting with the community.

**Tip**One of the goals of training is to help people learn new skills while helping them avoid bad habits. It can be a balancing act. For instance, you don't want to overwhelm people by adding in a lot of complexity and friction to a beginner-level class for report creators. However, it's a great investment to make newer content creators aware of things that could otherwise take them a while to figure out. An ideal example is teaching the ability to use a [**live connection**](https://docs.microsoft.com/en-us/power-bi/connect-data/desktop-report-lifecycle-datasets) to report from an existing dataset. By teaching this concept at the earliest logical time, you can save a less experienced creator thinking they always need one dataset for every report (and encourage the good habit of reusing existing datasets across reports).

Some larger organizations experience continual employee transfers and turnover. Such frequent change results in an increased need for a repeatable set of training resources.

### Training resources and approaches

There are many training approaches because people learn in different ways. If you can monitor and measure usage of your training materials, you'll learn over time what works best. Some training might be delivered more formally, such as classroom training with hands-on labs. Other types of training are less formal, such as:

* Lunch and learn presentations.
* Short how-to videos targeted to a specific goal.
* Curated set of online resources.
* Internal user group presentations.
* One-hour, one-week, or one-month challenges.
* Hackathon-style events.

The advantages of encouraging knowledge sharing among colleagues is described in the [Community of practice](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-community-of-practice) article.

**Tip**Whenever practical, learning should be correlated with building something meaningful and realistic. However, simple demo data does have value during a training course. It allows a learner to focus on how to use the technology rather than the data itself. After completion of introductory session(s), consider offering a bring your own data type of session. These types of sessions encourage the learner to apply their new technical skills to an actual business problem. Try to include multiple facilitators from the COE during this type of follow-up session so questions can be answered quickly.

The types of users you may target for training include:

* Content consumers.
* Report creators.
* Data creators (datasets and dataflows).
* Content owners, subject matter experts, and workspace administrators.
* Satellite COE members and the champions network.
* Power BI administrators.

**Important**Each type of user represents a different audience that has different training needs. The COE will need to identify how best to meet the needs of each audience. For instance, one audience might find a standard introductory Power BI Desktop class overwhelming, whereas another will want more challenging information with depth and detail. If you have a diverse population of Power BI content creators, consider creating personas and tailoring the experience to an extent that's practical.

The completion of training can be a leading indicator for success with [user adoption](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-maturity-levels#user-adoption-stages). Some organizations grant badges, like blue belt or black belt, as people progress through the training programs.

Give some consideration to how you want to handle users at various stages of [user adoption](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-maturity-levels#user-adoption-stages). Training to onboard new users (sometimes referred to as training day zero) and for less experienced users is very different to training for more experienced users.

How the COE invests its time in creating and curating training materials will change over time as adoption and maturity grows. You may also find over time that some community champions want to run their own tailored set of training classes within their functional business unit.

### Sources for trusted Power BI training content

A curated set of online resources is valuable to help community members focus and direct their efforts on what's important. Some publicly available training resources you might find helpful include:

* [Microsoft Learn](https://aka.ms/pbilearn).
* [Power BI courses and "in a day" training materials](https://aka.ms/pbitraining).
* [LinkedIn Learning](https://www.linkedin.com/learning/topics/power-bi).
* [Virtual workshops and training](https://www.microsoft.com/store/workshops-training-and-events/#keyword=Power%20BI).

Consider using [Microsoft Viva Learning](https://resources.techcommunity.microsoft.com/viva-learning/), which is integrated into Microsoft Teams. It includes content from sources such as [Microsoft Learn](https://aka.ms/pbilearn) and [LinkedIn Learning](https://www.linkedin.com/learning/topics/power-bi). Custom content produced by your organization can be included as well.

In addition to Microsoft content and custom content produced by your organization, you may choose to provide your user community with a curated set of recommended links to trusted online sources. There is a wide array of videos, blogs, and articles produced by the worldwide community. The community comprises Power BI experts, [Microsoft Most Valued Professions (MVPs)](https://mvp.microsoft.com/), and enthusiasts. Providing a curated learning path that contains specific, reputable, current, and high quality resources will provide the most value to your user community.

If you do make the investment to create custom in-house training, consider creating short, targeted content that focuses on solving one specific problem. It makes the training easier to find and consume. It's also easier to maintain and update over time.

**Tip**The **Help and Support** menu in the Power BI service is customizable. Once your centralized location for training documentation is operational, update the [**tenant setting in the admin portal**](https://docs.microsoft.com/en-us/power-bi/guidance/admin-tenant-settings#publish-get-help-information) with the link. The link can then be accessed from menu when users select the **Get Help** option. Also, be sure to teach users about the **Help** ribbon tab in Power BI Desktop. It includes links to guided learning, training videos, documentation, and more.

## Documentation

Concise, well-written documentation can be a significant help for users trying to get things done. Your needs for documentation, and how it's delivered, will depend on how Power BI is managed in your organization. For more information, see the [Content ownership and management](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-content-ownership-and-management) article.

Certain aspects of Power BI tend to be managed by a centralized team, such as the COE. The following types of documentation are helpful in these situations:

* How to request a Power BI license (and whether there are requirements for manager approval).
* How to request a new Premium capacity.
* How to request a new workspace.
* How to request a workspace be added to Premium capacity.
* How to request access to a gateway data source.
* How to request software installation.

**Tip**For certain activities that are repeated over and over, consider automating them using Power Apps and Power Automate. In this case, your documentation will also include how to access and use the Power Platform functionality.

Other aspects of Power BI can be managed by self-service users, decentralized teams, or by a centralized team. The following types of documentation might differ based on who owns and manages the content:

* How to request a new report.
* How to request a report enhancement.
* How to request access to a dataset.
* How to request a dataset enhancement.

**Tip**When planning for a centralized portal, as described earlier in this article, plan how to handle situations when guidance or governance policies need to be customized for one or more business units.

There are also going to be some [governance](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-governance) decisions that have been made and should be documented, such as:

* How to request content be certified.
* What are the approved file storage locations.
* What are the data retention and purge requirements.
* What are the requirements for handling sensitive data and personally identifiable information (PII).

Documentation should be located in your centralized portal, which is a searchable location where, preferably, users already work. Either [Teams or SharePoint](https://docs.microsoft.com/en-us/microsoft-365/community/should-i-store-my-files-in-teams-or-sharepoint-an-understanding-of-behind-the-scenes) work very well. Creating documentation in either wiki pages or in documents can work equally well, provided that the content is organized well and is easy to find. Shorter documents that focus on one topic are usually easier to consume than long, comprehensive documents.

**Important**One of the most helpful pieces of documentation you can publish for the community is a description of the [**tenant settings**](https://docs.microsoft.com/en-us/power-bi/guidance/admin-tenant-settings), and the group memberships required for each tenant setting. Users read about features and functionality online, and sometimes find that it doesn't work for them. When they are able to quickly look up your organization's tenant settings, it can save them from becoming frustrated and attempting workarounds. Effective documentation can reduce the number of help desk tickets that are submitted. It can also reduce the number of people who need to be assigned the Power BI administrator role (who might have this role solely for the purpose of viewing settings).

Over time, you may choose to allow some documentation to be maintained by the community if you have willing volunteers. In this case, you may want to introduce an approval process for changes.

When you see questions repeatedly arise in the Q&A forum (as described in the [User support](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-user-support) article), during office hours, or during lunch and learns, it's a great indicator that creating new documentation may be appropriate. When the documentation exists, it allows colleagues to reference it when needed. It contributes to user enablement and a self-sustaining community.

**Tip**When creating custom documentation or training materials, reference existing Microsoft sites using links when possible. Since Power BI is in a continual state of evolution, it will reduce the level of documentation maintenance needed over time.

## Templates

A [Power BI template](https://docs.microsoft.com/en-us/power-bi/create-reports/desktop-templates) is a .pbit file. It can be provided as a starting point for content creators. It's the same as a .pbix file, which can contain queries, a data model, and a report, but with one exception: the template file doesn't contain any data. Therefore, it's a smaller file that can be shared with the community, and it doesn't present a risk of inappropriately sharing data.

Providing Power BI template files for your community is a great way to:

* Promote consistency.
* Reduce learning curve.
* Show good examples and best practices.
* Increase efficiency.

Power BI template files can improve efficiency and help people learn during the normal course of their work. A few ways that template files are helpful include:

* Reports can use examples of good visualization practices.
* Reports can incorporate organizational branding and design standards.
* Datasets can include the structure for commonly used tables, like a date table.
* Helpful DAX calculations can be included, like a year-over-year (YoY) calculation.
* Common parameters can be included, like a data source connection string.
* An example of report and/or dataset documentation can be included.

**Note**Providing templates not only saves your content creators time, it also helps them move quickly beyond a blank page in an empty solution.

## Considerations and key actions

Considerations and key actions you can take to establish, or improve, mentoring and user enablement:

* Establish regular office hours, ideally at least once per week (depending on demand from users as well as staffing and scheduling constraints).
* Decide how you will communicate and advertise office hours to the user community.
* Decide what the expectations will be for office hours, including allowed topics or types of issues users can bring, how the queue of requests will work, if any information should be submitted ahead of time, and whether any follow up afterwards can be expected.
* Beyond office hours, consider what other types of mentoring services the COE could offer, such as co-development projects or best practices reviews.
* Create a centralized portal to serve as the hub for Power BI training, documentation, and resources. The centralized portal should also provide links to other community resources such as the Q&A forum and how to find help.
* Compile a curated list of reputable training resources that target the training needs and interests of your user community. Post the list in the centralized portal and create a schedule to review and validate the list.
* Consider what custom in-house training resources will be useful and worth the time investment.
* Create and promote a top 3-5 list of documentation and resources that will be most useful to the user community.

## Maturity levels

The following maturity levels will help you assess the current state of your mentoring and user enablement:

|  |  |
| --- | --- |
| **Level** | **State of Power BI mentoring and user enablement** |
| 100: Initial | Some documentation and resources exist, though they are siloed and inconsistent.Few users are aware of, or take advantage of, available resources. |
| 200: Repeatable | A centralized portal exists with a library of training, documentation, and resources.Office hours are held on a regular basis. |
| 300: Defined | The centralized portal is the primary hub for community members to locate information.The COE's skills mentoring program is in place to assist users in the community in various ways. |
| 400: Capable | Resources in the centralized portal are commonly referenced by champions and community members when supporting and learning from each other.Business units regularly engage with the COE and take advantage of its skills mentoring program. Tangible business value is gained from the program. |
| 500: Efficient | Documentation and resources are continually updated and improved by the COE, based on lessons learned. |

# Community of practice

A community of practice is a group of people with a common interest that interacts with, and helps, each other on a voluntary basis. Using Power BI to produce effective analytics is a common interest that can bring people together across an organization.

The following diagram provides an overview of an internal community.



The above diagram shows the following:

* The **community of practice** includes everyone with an interest in Power BI.
* The **Center of Excellence (COE)** forms the nucleus of the community. It oversees the entire community and interacts most closely with its champions.
* **Self-service content creators and subject matter experts (SMEs)** produce, publish, and support content that's used by their colleagues, who are consumers.
* **Content consumers** view content produced by both self-service creators and enterprise BI developers.
* **Champions** are a subset of the self-service content creators. Champions are in an excellent position to support their fellow content creators to generate effective Power BI solutions.

Champions are the smallest group among creators and SMEs. Self-service content creators and SMEs represent a larger number of people. Content consumers represent the largest number of people.

**Note**All references to the Power BI community in this adoption series of articles refer to internal users, unless explicitly stated otherwise. There's an active and vibrant worldwide community of bloggers and presenters who produce a wealth of knowledge about Power BI. However, internal users are the focus of this article.

For information about related topics including resources, documentation, and training provided for the Power BI community, see the [Mentoring and user enablement](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-mentoring-and-user-enablement) article.

## Champions network

One important part of a community of practice is its champions. A champion is a Power BI content creator who works in a business unit that engages with the COE. A champion is recognized by their peers as the go-to Power BI expert. A champion continually builds and shares their knowledge even if it's not an official part of their job role. Power BI champions influence and help their colleagues in many ways including solution development, learning, skills improvement, troubleshooting, and keeping up to date.

Champions emerge as leaders of the community of practice who:

* Have a deep interest in Power BI being used effectively and adopted successfully throughout the organization.
* Possess strong Power BI skills as well as domain knowledge for their functional business unit.
* Have an inherent interest in getting involved and helping others.
* Are early adopters who are enthusiastic about experimenting and learning.
* Can effectively translate business needs into solutions.
* Communicate well with colleagues.

**Important**To add an element of fun, some organizations refer to their champions network as ambassadors, Jedis, ninjas, or rangers. Microsoft has an internal community called BI Champs.

Often, people aren't directly asked to become champions. Commonly, champions are identified by the COE and recognized for the activities they're already doing, such as frequently answering questions in an internal discussion channel or participating in lunch and learns.

Different approaches will be more effective for different organizations, and each organization will find what works best for them as their maturity level increases.

**Important**Someone very well may be acting in the role of a champion without even knowing it, and without a formal recognition. The COE should always be on the lookout for champions. COE members should actively monitor the discussion channel to see who is helpful. They should deliberately encourage and support potential champions, and when appropriate, invite them into a champions network to make the recognition formal.

## Knowledge sharing

The overriding objective of a community of practice is to facilitate knowledge sharing among colleagues and across organizational boundaries. There are many ways knowledge sharing occurs. It could be during the normal course of work. Or, it could be during a more structured activity, such as:

|  |  |
| --- | --- |
| **Activity** | **Description** |
| Discussion channel | A Q&A forum where anyone in the community can post and view messages. Often used for help and announcements. For more information, see the [User support](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-user-support#internal-community-support) article. |
| Lunch and learn sessions | Regularly scheduled sessions where someone presents a short session about something they've learned or a solution they've created. The goal is to get a variety of presenters involved, because it's a powerful message to hear firsthand what colleagues have achieved. |
| Office hours with the COE | Regularly scheduled times when COE experts are available so the community can engage with them. Community users can receive assistance with minimal process overhead. For more information, see the [Mentoring and user enablement](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-mentoring-and-user-enablement) article. |
| Internal blog posts or wiki posts | Short blog posts, usually covering technical how-to topics. |
| Internal Power BI user group | A subset of the community that chooses to meet as a group on a regularly scheduled basis. User group members often take turns presenting to each other to share knowledge and improve their presentation skills. |
| Internal Power BI conferences or events | An annual or semi-annual internal conference the delivers a series of sessions focused on Power BI. |

**Important**Inviting an external presenter can reduce the effort level and bring a fresh viewpoint for learning and knowledge sharing.

## Incentives

A lot of effort goes into forming and sustaining a successful community. It's advantageous to everyone to empower and reward users who work for the benefit of the community.

### Rewarding community members

Incentives that the entire community (including champions) find particularly rewarding can include:

* **Contests with a small gift card or time off:** For example, you might hold a performance tuning event with the winner being the person who successfully reduced the size of their data model the most.
* **Ranking based on help points:** The more frequently someone participates in Q&A, they achieve a change in status on a leaderboard. This type of gamification promotes healthy competition and excitement. By getting involved in more conversations, the participant learns and grows personally in addition to helping their peers.
* **Leadership communication:** Reach out to a manager when someone goes above and beyond so that their leader, who may not be active in the Power BI community, sees the value that their staff member provides.

**Tip**Different types of incentives will appeal to different types of people. Some community members will be highly motivated by praise and feedback. Some will be inspired by gamification and a bit of fun. Others will highly value the opportunity to improve their level of knowledge.

### Rewarding champions

Incentives that champions find particularly rewarding can include:

* **More direct access to the COE:** The ability to have connections in the COE is valuable. It's depicted in the diagram shown earlier in this article.
* **Champion of the month:** Publicly thank one of your champions for something outstanding they did during the previous month. It could be a fun tradition at the beginning of a monthly lunch and learn.
* **A private experts discussion area:** A private area for the champions to share ideas and learn from each other is usually highly valued.
* **Specialized or deep dive information and training:** Access to additional information to help champions grow their skillsets (as well as help their colleagues) will be appreciated. It could include attending advanced training classes or conferences.

## Communication plan

Communication with the community occurs through various types of communication channels. Common communication channels include:

* Internal discussion channel or forum.
* Announcements channel.
* Organizational newsletter.

The most critical communication objectives include ensuring your community members know that:

* The COE exists.
* How to get help and support.
* Where to find resources and documentation.
* Where to find governance guidelines.
* How to share suggestions and ideas.

**Tip**Consider requiring a simple Power BI test before a user is granted a Power BI license. This test is a misnomer because it doesn't focus on any Power BI skills. Rather, it verifies that the user knows where to find help and resources. It sets them up for success. It's also a great opportunity to have users acknowledge any governance policies or data privacy and protection agreements you need them to be aware of. For more information, see the [**System oversight**](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-system-oversight) article.

### Types of communication

There are generally four types of communication to plan for:

* **New employee communications** can be directed to new employees (and contractors). It's an excellent opportunity to provide onboarding materials for new employees to get started with Power BI. It can include articles on topics like how to get Power BI Desktop installed, how to request a license, and where to find introductory training materials. It can also include general data governance guidelines that all users should be aware of.
* **Onboarding communications** can be directed to employees who are just acquiring a Power BI license or are getting involved with the Power BI community. It presents an excellent opportunity to provide the same materials as given to new employee communications (as mentioned above).
* **Ongoing communications** can include regular announcements and updates directed to all Power BI users, or subsets of users. It can include announcing changes that are planned to key organizational content. For example, changes are to be published for a critical shared dataset that's used heavily throughout the organization. It can also include the announcement of new features from the [Microsoft Power BI blog](https://powerbi.microsoft.com/blog/) and [Microsoft Power BI release plan](https://powerbi.microsoft.com/roadmap/) updates. For more information about planning for change, see the [System oversight](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-system-oversight#planning-for-change) article. Feature announcements are more likely to receive attention from the reader if the message includes meaningful context about why it's important. (Although an RSS feed can be a helpful technique, with the frequent pace of change, it can become noisy and might be ignored.)
* **Situational communications** can be directed to specific users or groups based on a specific occurrence discovered while [monitoring the platform](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-system-oversight#auditing-and-monitoring). For example, perhaps you notice a significant amount of sharing from the personal workspace a particular user, so you choose to send them some information about the benefits of workspaces and apps.

**Tip**One-way communication to the user community is important. Don't forget to also include bidirectional communication options to ensure the user community has an opportunity to provide feedback.

## Community resources

Resources for the internal community, such as documentation, templates, and training, are critical for adoption success. For more information about resources, see the [Mentoring and user enablement](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-mentoring-and-user-enablement) article.

## Considerations and key actions

Considerations and key actions you can take to initiate, grow, and sustain your champions network include:

* Clarify your specific goals for cultivating a champions network. Make sure these goals align with your overall Power BI strategy, and that your executive sponsor is on board.
* Create a plan to support the champions network. Although some aspects of a champions network will always be informally led, determine to what extent the COE will purposefully cultivate and support champion efforts throughout individual business units.
* Decide what level of commitment and expected time investment will be required of Power BI champions. (Note that the time investment can vary wildly from person to person, and team to team.) Plan to clearly communicate expectations to people who are interested to get involved. Obtain manager approval when appropriate.
* Determine how you will respond to requests to become a champion, and how the COE will seek out champions. Decide if you will openly encourage interested employees to self-identify as a champion and ask to learn more (less common). Or, whether the COE will observe efforts and extend a private invitation (more common).
* Consider how many champions is ideal for each functional business area. Usually, 1-2 champions per area works well, but it can vary based on the size of the team, the needs of the self-service community, and how the [COE is structured](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-center-of-excellence#structuring-a-coe).
* Determine how members of the champions network will be managed. It could be implemented through membership in a security group. Consider:
	+ How you will communicate with the champions network (for example, in a Teams channel, a Yammer group, and/or an email distribution list).
	+ How the champions network will communicate and collaborate with each other directly (across organizational boundaries).
	+ Whether a private and exclusive discussion forum for champions and COE members is appropriate
* Ensure champions have the resources they need, including:
	+ Direct access to COE members.
	+ Influence on data policies being implemented (for example, requirements for a dataset certification policy).
	+ Influence on the creation of best practices and guidance (for example, recommendations for accessing a specific source system).
* Actively involve certain champions as satellite members of the COE. For more information about federating the COE, see the [Center of Excellence](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-center-of-excellence#structuring-a-coe) article.
* Create a feedback loop so champions can easily provide information or submit suggestions to the COE.
* Routinely provide recognition and incentives for champions. Not only is praise an effective motivator, but the act of sharing examples of successful efforts can motivate and inspire others.

Considerations and key actions you can take improve knowledge sharing:

* Determine what kind of activities for knowledge sharing fit well into the organizational data culture.
* Ensure that all planned knowledge sharing activities are supportable and sustainable.
* Verify who will take responsibility for coordinating all knowledge sharing activities.

Considerations and key actions you can take to introduce incentives:

* Consider what type of incentives you could offer to your champions network.
* Consider what type of incentives you could offer to your broader internal community.

Considerations and key actions you can take improve communications:

* Evaluate which methods of communication fit well in your data culture.
* Determine who will be responsible for different types of communication, how, and when.
* Set up different ways to communicate, including history retention and search.

## Maturity levels

The following maturity levels will help you assess the current state of your community of practice:

|  |  |
| --- | --- |
| **Level** | **State of Power BI community** |
| 100: Initial | Some content creators do great work, but their efforts are unrecognized.Efforts to share knowledge are rare and unstructured.Communication is inconsistent. |
| 200: Repeatable | The first set of champions are identified, and champions network goals are established.Knowledge sharing practices gain traction and are now more consistent. |
| 300: Defined | Best practices are actively shared across the organization.Knowledge sharing in multiple forms is a normal and regularly scheduled occurrence.Goals for transparent communication with the user community are defined and executed with regularity. |
| 400: Capable | Champions are established for all business units and actively support colleagues in their self-service efforts.Incentives to recognize and reward knowledge sharing efforts are a common occurrence.Regular and frequent communication occurs based on a predefined communication plan. |
| 500: Efficient | Bidirectional feedback loops exist between the champions network and the COE. |

# User support

This article addresses user support. It focuses primarily on the resolution of issues.

The first sections of this article focus on user support aspects you have control over internally within your organization. The final topics focus on external resources that are available.

For a description of related topics, including skills mentoring, training, documentation, and co-development assistance provided to the internal Power BI user community, see the [Mentoring and user enablement](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-mentoring-and-user-enablement) article. The effectiveness of those activities can significantly reduce the volume of formal user support requests and increase user experience overall.

## Types of user support

If a user has an issue, do they know what their options are to resolve it? The following diagram shows some common types of user support that organizations employ successfully:



The six types of user support shown in the above diagram include:

|  |  |
| --- | --- |
| **Type** | **Description** |
| Type 1. | **Intra-team support (internal)** is very informal. Support occurs when team members learn from each other during the natural course of their job. |
| Type 2. | **Internal community support (internal)** can be organized informally, formally, or both. It occurs when colleagues interact with each other via internal community channels. |
| Type 3. | **Help desk support (internal)** handles formal support issues and requests. |
| Type 4. | **Extended support (internal)** involves handling complex issues escalated by the help desk. |
| Type 5. | **Microsoft support (external)** includes support for licensed users and administrators. It also includes [comprehensive Power BI documentation](https://docs.microsoft.com/en-us/power-bi/). |
| Type 6. | **Community support (external)** includes the worldwide community of Power BI experts, [Microsoft Most Valued Professionals (MVPs)](https://mvp.microsoft.com/), and enthusiasts who participate in forums and publish content. |

In some organizations, intra-team and internal community support are most relevant for self-service BI (content is owned and managed by creators and owners in decentralized business units). Conversely, the help desk and extended support are reserved for technical issues and enterprise BI (content is owned and managed by a centralized business intelligence team or Center of Excellence). In some organizations, all four types of support could be relevant for any type of content.

Each of the four types of internal user support introduced above are described in further detail in this article.

## Intra-team support

Intra-team support refers to when team members learn from and help each other during their daily work. People who emerge as your [Power BI champions](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-community-of-practice#champions-network) tend to take on this type of informal support role voluntarily because they have an intrinsic desire to help. Although it's an informal support mode, it should not be undervalued. Some estimates indicate that a large percentage of learning at work is peer learning, which is particularly helpful for analysts who are creating domain-specific Power BI solutions.

**Note**Intra-team support does not work well for individuals who are the only data analyst within a department. It's also not effective for those who don't have very many connections yet in their organization. When there aren't any close colleagues to depend on, other types of support, as described in this article, become more important.

## Internal community support

Assistance from your fellow community members often takes the form of messages in a discussion channel or forum set up specifically for this purpose. For example, someone posts a message that they're having problems getting a DAX calculation to work. They then receive a response from someone in the organization with suggestions or links.

**Tip**The goal of an internal Power BI community is to be self-sustaining, which can lead to reduced formal support demands and costs. It can also facilitate managed self-service BI occurring at a broader scale versus a purely centralized BI approach. However, there will always be a need to monitor, manage, and nurture the internal community. Here are two specific tips:

* Be sure to cultivate multiple experts in the more difficult topics like [**Data Analysis eXpressions (DAX)**](https://docs.microsoft.com/en-us/power-bi/transform-model/desktop-quickstart-learn-dax-basics) and the [**Power Query M formula language**](https://docs.microsoft.com/en-us/powerquery-m/quick-tour-of-the-power-query-m-formula-language). When someone becomes a recognized expert, they may become overburdened with too many requests for help.
* A greater number of community members may readily answer certain types of questions (for example, report visualizations), whereas a smaller number of members will answer others (for example, complex DAX). It's important for the COE to allow the community a chance to respond yet also be willing to promptly handle unanswered questions. If users repeatedly ask questions and don't receive an answer, it will significantly hinder growth of the community. In this case, a user is likely to leave and never return if they don't receive any responses to their questions.

An internal community discussion channel is commonly set up as a Teams channel or a Yammer group. The technology chosen should reflect where users already work, so that the activities occur within their natural workflow.

One benefit of an internal discussion channel is that responses can come from people that the original requester has never met before. In larger organizations, a [community of practice](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-community-of-practice), which brings people together based on a common interest, can offer diverse perspectives for getting help and learning in general.

Use of an internal community discussion channel allows the Center of Excellence (COE) to monitor the kind of questions people are asking. It's one way the COE can understand the issues users are experiencing (commonly related to content creation, but it could also be related to consuming content). Monitoring the discussion channel can also reveal additional Power BI experts and potential champions who were previously unknown to the COE.

**Important**It's a best practice to continually identify emerging Power BI champions, and to engage with them to make sure they're equipped to support their colleagues. As described in the [**Community of practice**](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-community-of-practice) article, the COE should actively monitor the discussion channel to see who is being helpful. It should deliberately encourage and support them, and if appropriate, invite them into the champions network.

Another key benefit of a discussion channel is that it's searchable, which allows other people to discover the information. It is, however, a change of habit for people to ask questions in an open forum rather than private messages or email. Be aware that some individuals will not be comfortable asking questions in such a public way because it openly acknowledges what they don't know, which might be embarrassing. This reluctance may reduce over time by promoting a friendly, encouraging, and helpful discussion channel.

**Tip**You may be tempted to create a bot to handle some of the most common, straightforward questions from the community. A bot can work for uncomplicated questions such as "How do I request a Power BI license?" or "How do I request a workspace?" Before taking this approach, consider if there are enough routine and predictable questions that would make the user experience better rather than worse. Often, a well-created FAQ (frequently asked questions) works better, and it's faster to develop and easier to maintain.

## Help desk support

The help desk is usually operated as a shared service, operated by the IT department. People who will likely rely on a more formal support channel include those who are:

* Less experienced with Power BI.
* Newer to the organization.
* Reluctant to post a message to the internal discussion community.
* Lacking connections and colleagues within the organization.

There are also certain technical issues which cannot be fully resolved without IT involvement, like software installation and upgrade requests when machines are IT-managed.

Busy help desk personnel are usually dedicated to supporting multiple technologies. For this reason, the easiest types of issues to support are those which have a clear resolution and can be documented in a knowledgebase, like software installation prerequisites. Some organizations task the help desk to handle only very simple break-fix issues, whereas other organizations have the help desk get involved with anything that is repeatable, like new [workspace](https://docs.microsoft.com/en-us/power-bi/collaborate-share/service-create-the-new-workspaces) requests, managing [gateway data sources](https://docs.microsoft.com/en-us/power-platform/admin/onpremises-data-gateway-source-management#add-new-data-source), or requesting new [Premium capacities](https://docs.microsoft.com/en-us/power-bi/admin/service-premium-what-is).

**Important**Your Power BI governance decisions will directly impact the volume of help desk requests. For example, if you choose to limit [**workspace creation permissions in the tenant settings**](https://docs.microsoft.com/en-us/power-bi/guidance/admin-tenant-settings#create-workspaces), it will result in users submitting help desk tickets. While it's a legitimate decision to make, you must be prepared to satisfy the request very quickly, usually within 1-4 hours if possible. Consider that automation with Power Apps and Power Automate can help make the process efficient. If you delay too long, users will use what they already have, and that may not be the ideal scenario. Promptness is critical for certain help desk requests.

Over time, troubleshooting and problem resolution skills become more effective as help desk personnel expand their knowledgebase and experience with Power BI. The best help desk personnel are those who have a good grasp of what users need to accomplish with Power BI.

**Tip**Purely technical issues, for example [**data refresh**](https://docs.microsoft.com/en-us/power-bi/connect-data/refresh-data) failure or the need to [**add a new user to a gateway data source**](https://docs.microsoft.com/en-us/power-platform/admin/onpremises-data-gateway-source-management#manage-users), usually involve straightforward responses associated with a service level agreement. For instance, there may be an agreement to respond to blocking issues within one hour and resolve them within eight hours. It's generally more difficult to define service level agreements (SLAs) for troubleshooting issues, like data discrepancies.

## Extended support

Since the COE has deep insight into how Power BI is used throughout the organization, they're a great option for extended support should a complex issue arise. Involving the COE in the support process should be by an escalation path.

Managing requests as purely an escalation path from the help desk gets difficult to enforce since COE members are often well-known to business users. To encourage the habit of going through the proper channels, COE members should redirect users to submit a help desk ticket. It will also improve the data quality for analyzing help desk requests.

## Microsoft support

In addition to the internal user support approaches discussed in this article, there are valuable [external support options](https://docs.microsoft.com/en-us/power-bi/admin/service-support-options) directly available to Power BI users and administrators that shouldn't be overlooked.

### Microsoft documentation

Check the [Power BI support site](https://powerbi.microsoft.com/support/) high-priority issues that broadly affect all customers. Global Microsoft 365 (M365) administrators have access to additional support issue details within the M365 portal.

Monitor the [Microsoft 365 Twitter account](https://twitter.com/MSFT365Status). Microsoft posts timely information and updates about outages for all Microsoft 365 services.

Refer to the comprehensive [Power BI documentation](https://docs.microsoft.com/en-us/power-bi/). It's an authoritative resource that can aid troubleshooting and search for information. You can prioritize results from the Power BI documentation site. For example, enter a site-targeted search request into your web search engine, like "power bi dataset site:docs.microsoft.com".

### Power BI Pro and Premium Per User end-user support

Users with a Power BI Pro or Premium Per User license are eligible to [log a support ticket with Microsoft](https://powerbi.microsoft.com/support/pro/).

**Tip**Make it clear to your internal user community whether you prefer technical issues be reported to the internal help desk. If your help desk is equipped to handle the workload, having a centralized internal area collect user issues can provide a superior user experience versus every user trying to resolve issues on their own. Having visibility and analyzing support issues is also helpful for the [**COE**](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-center-of-excellence).

### Administrator support

There are several support options available for [global and Power BI administrators](https://docs.microsoft.com/en-us/power-bi/admin/service-support-options#get-started-with-support-for-admins).

For customers who have a [Microsoft Unified Support](https://www.microsoft.com/msservices/unified-support-solutions) contract, consider granting help desk and COE members access to the [Microsoft Services Hub](https://serviceshub.microsoft.com/home). One advantage of the Microsoft Services Hub is that your help desk and COE members can be setup to [submit and view support requests](https://docs.microsoft.com/en-us/services-hub/getting-started/roles-permissions#support-contact-permissions).

## Worldwide community support

In addition to the internal user support approaches discussed in this article, and Microsoft support options discussed previously, you can leverage the worldwide Power BI community. This option is useful when a question can be easily understood by someone not close to the problem, and when it doesn't involve sensitive data.

### Publicly available community forums

There are several [public Power BI community forums](https://community.powerbi.com/t5/Forums/ct-p/PBI_Comm_Forums) where users can post issues and receive responses from any Power BI user in the world. It can be very powerful and exceedingly helpful. However, as is the case with any public forum, it's important to validate the advice and information posted on the forum.

### Publicly available discussion areas

It's very common to see people posting Power BI technical questions on platforms like Twitter. A quick look at the [#PowerBI hashtag](https://twitter.com/search?q=%23PowerBI&f=live) reveals a vibrant global community of Power BI enthusiasts. You will find discussions, post announcements, and users helping each other. The [#PowerBIHelp hashtag](https://twitter.com/search?q=%23PowerBIHelp&f=live) is sometimes used, though less frequently.

### Community documentation

The Power BI global community is vibrant. Every day, there are a great number of Power BI blog posts, articles, webinars, and videos published. When relying on community information for troubleshooting, watch out for:

* How recent the information is.
* Whether the situation and context of the solution found online truly fits your circumstance.
* The credibility of the information being presented.

## Considerations and key actions

Considerations and key actions you can take to improve your intra-team support:

* Provide recognition and encouragement to your Power BI champions, as well as incentives, as described in the [Community of practice](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-community-of-practice#champions-network) article.
* Reward and praise meaningful grassroots efforts when you see them happening.
* If informal intra-team efforts aren't adequate, consider formalizing the roles you want to enact in this area, and the expected contributions and responsibilities.

Considerations and key actions you can take to improve your internal community support:

* Encourage people to ask questions in the designated community discussion channel. As the habit builds over time, it will become normalized to use that as the first option. Over time, it will evolve to become more self-supporting.
* Ensure that the appropriate COE members actively monitor this discussion channel. They can step in if a question remains unanswered, improve upon answers, or make corrections when appropriate. They can also post links to additional information to raise awareness of existing resources. Although the goal of the community is to become self-supporting, it still requires dedicated resources to monitor and nurture it.
* Make sure your user population knows the internal community support area exists. It could include the prominent display of links, or including a link in regular communications. You can also [customize the help menu links](https://docs.microsoft.com/en-us/power-bi/guidance/admin-tenant-settings#publish-get-help-information) in the Power BI service to direct users to your internal resources.
* Set up automation to ensure that all your Free, Power BI Pro, and Premium Per User licensed users automatically have access to the community discussion channel. It's possible to automate license setup using [group-based licensing](https://docs.microsoft.com/en-us/azure/active-directory/enterprise-users/licensing-groups-assign).

Considerations and key actions you can take to improve your internal help desk support:

* Determine the initial scope of Power BI topics that the help desk will handle.
* Assess the readiness level of your help desk to handle Power BI support.
* Arrange for additional training for help desk staff, based on readiness gaps.
* Determine what the escalation path will be for requests the help desk cannot directly handle.
* Update the help desk knowledgebase for known Power BI topics. Ensure someone is responsible for regular updates to the knowledgebase to reflect new and enhanced features over time.
* Ensure a good issue tracking system is in place. It's often a ticketing system that can manage priority levels.
* Decide if anyone will be on-call for any issues related to Power BI. If appropriate, ensure the expectations for 24/7 support are clear.
* Determine what SLAs will exist, and that expectations for response and resolution are clearly communicated.
* Be prepared to address specific common issues extremely quickly. For example, a request to add a new [gateway data source](https://docs.microsoft.com/en-us/power-platform/admin/onpremises-data-gateway-source-management#add-new-data-source) should be handled very quickly (to avoid user frustration, and to minimize use of personal gateways as an workaround). Slow support response may result in users finding workarounds.

Considerations and key actions you can take to improve your internal COE extended support:

* Clearly define where help desk responsibilities end, and where COE extended support responsibilities begin.
* Ensure that COE members have a direct escalation path to reach global administrators for Microsoft 365 and Azure. It's critical when a widespread issue arises that's beyond the scope of Power BI.
* Create a feedback loop from the COE back to the help desk so that the IT knowledgebase can be updated. The goal is for the primary help desk personnel to continually become better equipped at handling more issues in the future.
* Create a feedback loop from the help desk to the COE. When support personnel observe redundancies or inefficiencies, they can communicate that information to the COE, who might choose to improve the knowledgebase or get involved (particularly if it relates to governance or security).

## Maturity levels

The following maturity levels will help you assess the current state of your Power BI user support:

|  |  |
| --- | --- |
| **Level** | **State of Power BI user support** |
| 100: Initial | Individual business units find effective ways of supporting each other, though tactics are siloed and not consistently applied.An internal discussion channel is available, but it's not monitored closely so the user experience is inconsistent. |
| 200: Repeatable | The importance of intra-team support is encouraged and actively supported by the COE, including direct support of the champions network.The internal discussion channel gains traction as the default place for Power BI Q&A.The help desk handles a small number of the most common Power BI technical support issues. |
| 300: Defined | The internal discussion channel is now popular and largely self-sustaining. COE members actively monitor and manage the discussion channel to ensure questions are answered quickly and correctly.The help desk is fully prepared to handle all known and expected Power BI technical support issues, and the COE provides appropriate extended support when required. |
| 400: Capable | A recognition program is established, and it generates enthusiasm and encourages sharing best practices.SLAs are in place to define help desk support expectations, including extended support, and they are clear to everyone involved. |
| 500: Efficient | Bidirectional feedback loops exist between the help desk and the COE.Key performance indicators measure community engagement and satisfaction.Automation is in place when it adds direct value to the user experience (for example, automatic access to the community), or for specific help desk activities (for example, use of APIs and scripts that increase speed and reduce error). |

# System oversight

System oversight—also known as Power BI administration—is the ongoing, day-to-day, administrative activities that:

* Enact governance guidelines and policies to support self-service BI and enterprise BI.
* Facilitate and support the internal processes and systems that empower the internal user community to the extent possible, while adhering to the organization's regulations and requirements.
* Allow for broader organizational adoption of Power BI with effective governance and data management practices.

**Important**Your organizational [**data culture**](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-data-culture) objectives provide direction for your [**governance**](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-governance) decisions, which in turn dictate how [**Power BI administration**](https://docs.microsoft.com/en-us/power-bi/admin/service-admin-administering-power-bi-in-your-organization) activities take place and by whom.

Administration is a broad and deep topic. The goal of this article is to introduce some of the most important considerations and actions to help you become successful with your [organizational adoption](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-maturity-levels) objectives.

## Power BI administrators

The Power BI administrator role is a defined role in Microsoft 365, which delegates a [subset of Power BI-specific](https://docs.microsoft.com/en-us/power-platform/admin/use-service-admin-role-manage-tenant#service-administrator-permission-matrix) management activities. Global Microsoft 365 administrators are implicitly Power BI administrators.

A key governance decision is who to assign as a Power BI administrator. It's a centralized role which affects your entire Power BI tenant. Ideally, there are [2-4 people in the organization](https://docs.microsoft.com/en-us/microsoft-365/admin/add-users/about-admin-roles?view=o365-worldwide&preserve-view=true#security-guidelines-for-assigning-roles) who are capable of managing the Power BI service, and who are in close coordination with the [Center of Excellence (COE)](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-center-of-excellence).

### High privilege role

The Power BI administrator role is considered a high privilege role because:

* Settings that are managed by a Power BI administrator have a significant effect on user capabilities and user experience (described in the [Tenant settings](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-system-oversight#tenant-settings) section below).
* Power BI administrators can update access permissions for any workspace (excluding personal workspaces and [classic workspaces](https://powerbi.microsoft.com/blog/updated-timeline-for-upgrading-classic-workspaces/)). The result is that an administrator can allow permission to view or download data artifacts as they see fit (described in the [Tenant settings](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-system-oversight#tenant-settings) section below).
* Power BI administrators can view all tenant metadata, including all user activities that occur in the Power BI service (described in the [auditing and monitoring](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-system-oversight#auditing-and-monitoring) section below).

**Important**
Having too many Power BI administrators is a risk as it increases the probability of unapproved or unintended changes

### Roles and responsibilities

The types of activities that an administrator will do on a day-to-day basis will differ between organizations. What's important, and given priority in your [data culture](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-system-oversight#tenant-settings), will heavily influence what an administrator does to support business-led self-service BI, managed self-service BI, and enterprise BI. For more information, see the [Content ownership and management](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-content-ownership-and-management) article.

**Tip**The best type of person to assign as a Power BI administrator is one who has enough knowledge about Power BI to understand what self-service users need to accomplish.

There are several [types of Power BI administrators](https://docs.microsoft.com/en-us/power-bi/admin/service-admin-administering-power-bi-in-your-organization#administrator-roles-related-to-power-bi). The following table describes the roles that are used most often on a regular basis:

|  |  |  |
| --- | --- | --- |
| **Role** | **Scope** | **Description** |
| Power BI administrator | Power BI tenant | Manages tenant settings and other aspects of the Power BI service. All general references to administrator in this article refer to this type of administrator. |
| Power BI Premium capacity administrator | One capacity | Manages workspaces, workloads, and monitors the health of a Premium capacity. |
| Power BI gateway administrator | One gateway | Manages gateway data source configuration, credentials, and users assignments. May also handle gateway software updates (or collaborate with infrastructure team on updates). |
| Power BI workspace administrator | One workspace | Manages workspace settings and access. |

The Power BI ecosystem is very broad and deep. There are many different ways that the Power BI service integrates with other systems and platforms. From time to time, it will be necessary to work with other system administrators and IT professionals, such as:

* Global Microsoft 365 administrator.
* Azure Active Directory administrator.
* Teams administrator.
* OneDrive administrator.
* SharePoint administrator.
* Database administrator.
* Licensing and billing administrator.
* Intune administrator.
* Desktop support team.
* Infrastructure team.
* Networking team.
* Security and compliance team.

The remainder of this article discusses the most common activities that a Power BI administrator does. It focuses on those that are important to carry out effectively when taking a strategic approach to [Power BI organizational adoption](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-overview).

## Service management

Overseeing the Power BI service is a crucial aspect to ensure that all users have a good experience with Power BI.

### Tenant settings

Proper management of [tenant settings](https://docs.microsoft.com/en-us/power-bi/admin/service-admin-portal#tenant-settings) in the Power BI service is critical. Tenant settings are the main way to control which Power BI capabilities are enabled and to which groups of users in your organization.

It's essential that tenant settings align with governance guidelines and policies, and also with how the COE makes decisions. If a Power BI administrator independently decides which settings to enable or disable, that's a clear indicator of an opportunity to improve governance processes.

**Important**Changing the tenant settings should go through a change control process with an approval mechanism. It should document all changes, recording who made the change, when, and why.

Since content creators and consumers can easily read online about available features in Power BI, it can be very frustrating when capabilities don't function as expected. It can lead to dissatisfied users and less effective [organizational adoption, user adoption, and solution adoption](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-maturity-levels). Here's a list of common questions asked by confused and frustrated users:

* Why can't I create a workspace?
* Why can't I export data?
* Why doesn't my custom visual work?
* Why can't I certify a dataset?

**Caution**If you discover situations that aren't ideal, such as too many data exports in the activity log, resist the urge to disable the feature entirely. Prohibiting features leads to user frustration, and worse, workarounds. Before disabling a setting, find out why users are relying on certain techniques. Perhaps a solution needs to be redesigned, or additional user education and training could mitigate the concerns. The bottom line: knowledge sharing is an effective form of governance.

Since there's no reader role to view tenant settings, it can be a challenge in larger organizations. Consider publishing a document to the centralized portal that describes the tenant settings, as described in the [mentoring and user enablement](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-mentoring-and-user-enablement) article.

The following activities apply when reviewing and validating each tenant setting:

* Tenant setting:
	+ Enabled, or
	+ Disabled
* Tenant setting applicable to:
	+ The entire organization, or
	+ Limited to specific security group(s):
		- Does a suitable security group already exist?, or
		- Does a new security group need to be created?

### Admin portal

As discussed in the Power BI adoption [maturity levels](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-maturity-levels) article, organizational adoption refers to the effectiveness of Power BI governance and data management practices to support and enable enterprise BI and self-service BI. Actively managing all areas of the Power BI service (in addition to the tenant settings) in accordance with adoption goals has a direct influence on ensuring that all users have a good experience with Power BI.

Additional responsibilities for managing the Power BI service include:

* [Workspace management and access](https://docs.microsoft.com/en-us/power-bi/admin/service-admin-portal#workspaces).
* [Premium capacity and Premium Per User settings](https://docs.microsoft.com/en-us/power-bi/admin/service-admin-portal#capacity-settings).
* [Embed codes](https://docs.microsoft.com/en-us/power-bi/admin/service-admin-portal#embed-codes).
* [Organizational visuals](https://docs.microsoft.com/en-us/power-bi/admin/service-admin-portal#organizational-visuals).
* [Azure connections](https://docs.microsoft.com/en-us/power-bi/admin/service-admin-portal#azure-connections).
* [Custom branding](https://docs.microsoft.com/en-us/power-bi/admin/service-admin-portal#custom-branding).
* [Featured content](https://docs.microsoft.com/en-us/power-bi/admin/service-admin-portal#manage-featured-content).

In addition to these documentation links, see the [Planning a Power BI enterprise deployment whitepaper](https://aka.ms/PBIEnterpriseDeploymentWP), which describes additional considerations for Power BI administration.

## User machines and devices

The management of user machines and devices is usually a responsibility of the IT department. The adoption of Power BI depends directly on content creators and consumers having the applications they need installed and configured correctly.

The following [software installations](https://powerbi.microsoft.com/downloads/) are available for content creators:

|  |  |
| --- | --- |
| **Software** | **Audience** |
| Power BI Desktop | Content creators who develop data models and interactive reports for deployment to the Power BI service. |
| Power BI Desktop Optimized for Report Server | Content creators who develop data models and interactive reports for deployment to Power BI Report Server. |
| Power BI Report Builder | Content creators who develop paginated reports for deployment to the Power BI service or Power BI Report Server. |
| Power BI Mobile Application | Content creators or consumers who interact with content that's been published to the Power BI service or Power BI Report Server, using iOS, Android, or Windows 10 applications. |
| On-Premises Data Gateway (Personal Mode) | Content creators who publish datasets to the Power BI service and manage scheduled data refresh (see additional description in the [Gateway architecture and management](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-system-oversight#gateway-architecture-and-management) section of this article). |

**Important**Not all the listed software will be necessary for all content creators. Power BI Desktop is the most common requirement and is the starting point when in doubt.

It's very important that all content creators who collaborate with others use the same version of the software—especially Power BI Desktop, which is updated monthly. Ideally, software updates are available from the Microsoft Store or installed by an automated IT process. This way, users don't have to take any specific action to obtain updates.

Because new capabilities are continually released, software updates should be released promptly. This way, users can take advantage of the new capabilities, and their experience is aligned to documentation. It's also important to be aware of the [update channel](https://docs.microsoft.com/en-us/deployoffice/overview-update-channels). It provides new (and updated) features for Office apps, such as Excel and Word, on a regular basis.

Other common items that may need to be installed on user machines include:

* Drivers to support data connectivity, for example, Oracle, HANA, or the Microsoft Access Database Engine.
* The [Analyze in Excel](https://docs.microsoft.com/en-us/power-bi/collaborate-share/service-analyze-in-excel) provider.
* [External tools](https://docs.microsoft.com/en-us/power-bi/transform-model/desktop-external-tools), for example, Tabular Editor, DAX Studio, or ALM Toolkit.
* [Custom data source connectors](https://docs.microsoft.com/en-us/power-bi/connect-data/desktop-connector-extensibility).

In addition to software installations, user machines may be managed for:

* Group policy settings. For example, settings can allow the use of [custom visuals](https://docs.microsoft.com/en-us/admin/organizational-visuals#certified-power-bi-visuals) so that the Power BI Desktop experience aligns with the Power BI service to ensure a consistent user experience.
* Registry settings. For example, disable the Power BI Desktop [sign-in form](https://docs.microsoft.com/en-us/power-bi/admin/desktop-admin-sign-in-form) or [tune Query Editor performance](https://docs.microsoft.com/en-us/power-bi/create-reports/desktop-evaluation-configuration).

**Tip**Effective management of software, drivers, and settings can make a big difference to the user experience, and that can translate to increased [**user adoption**](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-maturity-levels#user-adoption-stages) and satisfaction, and reduced [**user support**](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-user-support) costs.

## Architecture

### Data architecture

Data architecture refers to the principles, practices, and methodologies that govern and define what data is collected, and how it is ingested, stored, managed, integrated, modeled, and used.

There are many data architecture decisions to make. Frequently the COE engages in data architecture design and planning. It's common for administrators to get involved as well, especially when they manage databases or Azure infrastructure.

**Important**Data architecture decisions significantly impact on Power BI adoption, user satisfaction, and individual project success rates.

A few data architecture considerations that affect adoption of Power BI include:

* Where does Power BI fit into the organization's entire data architecture? And, are there other existing components such as an enterprise data warehouse (EDW) or a data lake that will be important to factor into plans?
* Is Power BI used end-to-end for data preparation, data modeling, and data presentation? Or, is Power BI used only some of those capabilities?
* Where will users consume the content? Generally, the three main ways to deliver content are: the Power BI service, Power BI Report Server, and embedded in custom applications. The [Planning a Power BI enterprise deployment whitepaper](https://aka.ms/PBIEnterpriseDeploymentWP) includes a section on Power BI architectural choices, which describes when to consider each of these three main choices. Additionally, [Microsoft Teams](https://powerbi.microsoft.com/blog/guide-to-enabling-your-organization-to-use-power-bi-in-microsoft-teams/) is a convenient alternative to the Power BI service, especially for users who spend a lot of time in Teams.
* Who is responsible for managing and maintaining the data architecture? Is it a centralized team, or a decentralized team? How is the [COE](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-center-of-excellence) represented in this team? Are certain skillsets required?
* What [data sources](https://docs.microsoft.com/en-us/power-bi/connect-data/desktop-data-sources) are the most important, and what types of data will we be acquiring?
* What [connectivity mode](https://docs.microsoft.com/en-us/power-bi/connect-data/service-dataset-modes-understand) and [storage mode](https://docs.microsoft.com/en-us/power-bi/transform-model/desktop-storage-mode) choices (for example, import, live connection, DirectQuery, or composite model frameworks) are the best fit for the use cases?
* To what extent is data reusability encouraged using [shared datasets](https://docs.microsoft.com/en-us/power-bi/connect-data/desktop-report-lifecycle-datasets)?
* To what extent is the reusability of data preparation logic encouraged using [dataflows](https://docs.microsoft.com/en-us/power-bi/transform-model/dataflows/dataflows-introduction-self-service)?

When becoming acquainted with Power BI, many system administrators assume it's a query tool much like SQL Server Reporting Services (SSRS). The breadth of capabilities for Power BI, however, are vast in comparison. So, it's important for administrators to become aware of Power BI capabilities before they make architectural decisions.

**Tip**Get into the good habit of completing a technical proof of concept (POC) to test out assumptions and ideas. The goal of a POC is to address unknowns and reduce risk as early as possible. A POC doesn't have to be throwaway work, but it should be narrow in scope. Best practices reviews, as discussed in the [**Mentoring and user enablement**](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-mentoring-and-user-enablement) article, are another useful way to help content creators with important architectural decisions.

### Premium capacity management

[Power BI Premium](https://powerbi.microsoft.com/power-bi-premium/) includes additional features and capabilities to deliver BI solutions at scale. Premium subscriptions may be purchased [by capacity or per user](https://powerbi.microsoft.com/pricing/) with Premium Per User (PPU). This section primarily focuses on Premium capacity, which requires additional oversight.

Power BI Premium can play a significant role in your BI strategy. Some top reasons to invest in Premium include:

* [Unlimited content distribution](https://docs.microsoft.com/en-us/power-bi/admin/service-premium-what-is#unlimited-content-sharing) to large numbers of read-only (content consumption with a free Power BI license is available in Premium capacity only, not PPU).
* [Deployment pipelines](https://docs.microsoft.com/en-us/power-bi/create-reports/deployment-pipelines-overview) to manage the publication of content to development, test, and production workspaces. They are highly recommended for critical content to improve release stability.
* [Paginated reports](https://docs.microsoft.com/en-us/power-bi/paginated-reports/paginated-reports-report-builder-power-bi) to deliver highly-formatted, pixel-perfect reports. This report type allows content creators to meet additional types of information delivery requirements.
* [XMLA endpoint](https://docs.microsoft.com/en-us/power-bi/admin/service-premium-connect-tools), which is an industry standard protocol for managing and publishing a dataset, or querying the dataset from any XMLA-compliant tool.
* Increased model size limits, including [large dataset](https://docs.microsoft.com/en-us/power-bi/admin/service-premium-large-models) support.
* More frequent [data refreshes](https://docs.microsoft.com/en-us/power-bi/connect-data/refresh-data#power-bi-refresh-types).
* Storage of data in a specific geographic area ([multi-geo](https://docs.microsoft.com/en-us/power-bi/admin/service-admin-premium-multi-geo) is available by capacity only).

This list is not all-inclusive. For a complete list of Premium features, see [Power BI Premium FAQ](https://docs.microsoft.com/en-us/power-bi/admin/service-premium-faq).

#### Managing Premium capacity

Overseeing the health of Power BI Premium capacity is an essential ongoing activity for administrators because, by definition, Premium capacity includes a fixed level of system resources. It equates to memory and CPU limits that must be managed to achieve optimal performance.

**Caution**Lack of management and exceeding the limits of Premium capacity can often result in performance challenges and user experience challenges. Both challenges, if not managed correctly, can contribute to negative impact on adoption efforts.

Suggestions for managing Premium capacity:

* Create a specific set of criteria for content that will be published to Premium capacity. It's particularly relevant when a single capacity is used by multiple business units because the potential exists to disrupt other users if the capacity is not well-managed. For a list of items that may be included in the best practices review (such as reasonable dataset size and efficient calculations), see the [Mentoring and user enablement](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-mentoring-and-user-enablement#best-practices-reviews) article.
* Regularly use the [Premium monitoring app](https://docs.microsoft.com/en-us/power-bi/admin/service-premium-gen2-metrics-app) to understand resource utilization and patterns for the Premium capacity. Most importantly, look for consistent patterns of overutilization, which will contribute to user disruptions. An analysis of usage patterns should also make you aware if the capacity is underutilized, indicating more value could be gained from the investment.
* Configure the [tenant setting](https://docs.microsoft.com/en-us/power-bi/admin/service-interruption-notifications#enable-notifications) so Power BI notifies you if the [Premium capacity becomes overloaded](https://powerbi.microsoft.com/blog/announcing-timely-premium-capacity-overload-alerts/), or an outage or incident occurs.

#### Autoscale

[Autoscale](https://docs.microsoft.com/en-us/power-bi/admin/service-premium-auto-scale) is a capability of [Power BI Premium Gen 2](https://docs.microsoft.com/en-us/power-bi/admin/service-premium-concepts) that's intended to handle occasional or unexpected bursts in Premium usage levels. It can respond to these bursts by automatically increasing CPU resources to support the increased workload. Automated scaling up reduces the risk of performance and user experience challenges in exchange for a financial impact. If the Premium capacity is not well-managed, autoscale may trigger more often than expected. In this case, the [Premium monitoring app](https://docs.microsoft.com/en-us/power-bi/admin/service-premium-gen2-metrics-app) can help you to determine underlying issues.

#### Decentralized Premium capacity management

Capacity administrators are responsible for [assigning workspaces](https://docs.microsoft.com/en-us/power-bi/admin/service-admin-premium-manage#assign-a-workspace-to-a-capacity) to a specific capacity. Note that workspace administrators can also assign a workspace to PPU if the workspace administrator possesses a PPU license. However, it would require that all other workspace users must also have a PPU license.

It's possible to set up multiple capacities to facilitate decentralized management by different business units. Decentralizing management of certain aspects of Power BI is a great way to balance agility and control. Here's an example to describe how it could be managed for Premium capacity:

* [Purchase](https://docs.microsoft.com/en-us/power-bi/admin/service-admin-premium-purchase) a P3 capacity node in Microsoft 365, which includes 32 virtual cores.
* Use 16 cores to create the first capacity—it will be used by the Sales team.
* Use 8 cores to create the second capacity—it will be used by the Operations team.
* Use the remaining 8 cores to create the third capacity—it will support general use.

This example has several advantages:

* Separate [capacity administrators](https://docs.microsoft.com/en-us/power-bi/admin/service-admin-premium-manage#manage-user-permissions) may be configured for each capacity, and so it facilitates decentralized management situations.
* If a capacity is not well-managed, the effect is confined to that capacity only. The other capacities are not impacted.

However, the example has disadvantages, too:

* The [limits per capacity](https://docs.microsoft.com/en-us/power-bi/admin/service-premium-what-is#capacity-nodes) are lower. The maximum memory size allowed for datasets isn't the entire P3 capacity node size; rather, it's the assigned capacity size where the dataset is hosted.

### Gateway architecture and management

The [on-premises data gateway](https://docs.microsoft.com/en-us/power-bi/connect-data/service-gateway-onprem) facilitates the secure and efficient transfer of data between organizational data sources and the Power BI service. A gateway is needed for data connectivity to on-premises or cloud services when a data source is:

* Located within the enterprise data center.
* Configured behind a firewall.
* Within a virtual network.
* Within a virtual machine.

There are three types of gateways:

* **On-premises data gateway (standard mode)** is a gateway service that supports connections to registered data sources for many users to use. The gateway software installations and updates are installed on a machine that's managed by the customer.
* **On-premises data gateway (personal mode)** is a gateway service that supports data refresh only. This gateway mode is typically installed on the PC of the user. It supports use by one user only. It does not support live connection or DirectQuery connections.
* **Virtual network data gateway** is a Microsoft managed service that supports connectivity for many users. Specifically, it supports connectivity for datasets and dataflows stored in workspaces assigned to Premium capacity or Premium Per User.

**Tip**The decision of [**who can install gateway software**](https://docs.microsoft.com/en-us/power-platform/admin/onpremises-data-gateway-management#manage-gateway-installers) is a governance decision. For most organizations, use of options 1 or 3 should be strongly encouraged over option 2 because they are more scalable and manageable.

#### Decentralized gateway management

The On-premises data gateway (standard mode) and Virtual network data gateway support specific data source types that can be registered, together with connection details and how credentials are stored. Users can be granted permission use the gateway data source.

Certain aspects of gateway management can be done effectively on a decentralized basis to balance agility and control. For example, the Operations group may have a gateway dedicated to its team of self-service content creators and data owners. Decentralized gateway management works best when it's a joint effort as follows:

Managed by the decentralized data owners:

* Departmental data source [connectivity information and privacy levels](https://docs.microsoft.com/en-us/power-bi/connect-data/service-gateway-data-sources#add-a-data-source).
* Departmental data source [stored credentials](https://docs.microsoft.com/en-us/power-bi/connect-data/service-gateway-data-sources#store-encrypted-credentials-in-the-cloud) (including responsibility for updating routine password changes).
* Departmental data source [users](https://docs.microsoft.com/en-us/power-bi/connect-data/service-gateway-data-sources#manage-users) who are permitted to use each data source.

Managed by centralized data owners (includes data sources that are used broadly across the organization; management is centralized to avoid duplicated data sources):

* Centralized data source [connectivity information and privacy levels](https://docs.microsoft.com/en-us/power-bi/connect-data/service-gateway-data-sources#add-a-data-source).
* Centralized data source [stored credentials](https://docs.microsoft.com/en-us/power-bi/connect-data/service-gateway-data-sources#store-encrypted-credentials-in-the-cloud) (including responsibility for updating routine password changes).
* Centralized data source [users](https://docs.microsoft.com/en-us/power-bi/connect-data/service-gateway-data-sources#manage-users) who are permitted to use each data source.

Managed by IT:

* Gateway software updates (gateway updates are usually released monthly).
* Installation of drivers and custom connectors (the same ones that are installed on [user machines](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-system-oversight#user-machines-and-devices)).
* Gateway cluster management (number of machines in the gateway cluster for high availability, disaster recovery, and to eliminate a single point of failure, which can cause significant user disruptions).
* Server management (for example, operating system, RAM, CPU, or networking connectivity).
* Management and backup of encryption keys.
* Monitoring of gateway logs to assess when scale-up or scale-out is necessary.
* Alerting of downtime or persistent low machine resources.

**Tip**Allowing a decentralized team to manage certain aspects of the gateway means they can move faster. The tradeoff of decentralized gateway management does mean running more gateway servers so that each can be dedicated to a specific area of the organization. If gateway management is handled entirely by IT, it's imperative to have a good process in place to quickly handle requests to add data sources and apply user updates.

## User licenses

Every user of the Power BI service needs a commercial license which is integrated with an Azure Active Directory identity. The user license may be Free, Power BI Pro, or Power BI Premium Per User. A user license is obtained via a subscription which authorizes a certain number of licenses with a start and end date.

There are two approaches to procuring subscriptions:

* **Centralized:** Microsoft 365 billing administrator purchases a subscription for [Power BI Pro or Premium Per User](https://powerbi.microsoft.com/pricing/). It's the most common way to manage subscriptions and assign licenses.
* **Decentralized:** Individual departments purchase a subscription via [self-service purchasing](https://docs.microsoft.com/en-us/microsoft-365/commerce/subscriptions/self-service-purchase-faq?view=o365-worldwide&preserve-view=true).

### Self-service purchasing

An important governance decision relates to what extent self-service purchasing will be allowed or encouraged.

Self-service purchasing is useful for:

* Larger organizations with decentralized business units that have purchasing authority and want to handle payment directly with a credit card.
* Organizations that intend to make it as easy as possible to purchase subscriptions on a monthly commitment.

Consider disabling self-service purchasing when:

* Centralized procurement processes are in place to meet regulatory, security, and governance requirements.
* Discounted pricing is obtained through an Enterprise Agreement (EA).
* Existing processes are in place to handle intercompany chargebacks.
* Existing processes are in place to handle [group-based](https://docs.microsoft.com/en-us/azure/active-directory/enterprise-users/licensing-groups-assign) licensing assignments.
* Prerequisites are required for obtaining a license, such as approval, justification, training, or a governance policy requirement.
* There's a valid need, such as a regulatory requirement, to control access to the Power BI service very closely.

### Trials

Another important governance decision is whether user trials are allowed. By default, trials are enabled. That means when content is shared with a colleague, if the recipient does not have a Power BI Pro or Premium Per User license, they will be prompted to start a trial to view the content (if the content doesn’t reside within Premium capacity). The trial experience is a great convenience and allows people to continue with their normal workflow.

Generally, disabling trials is not recommended. It can encourage users to apply workarounds, perhaps by exporting data or working outside of supported tools and processes. Consider disabling trials only when:

* There are serious cost concerns that would make it unlikely to grant full licenses at the end of the trial period.
* Prerequisites are required for obtaining a license (such as approval, justification, or a training requirement), and it's not sufficient to meet this requirement during the trial period.
* There's a valid need, such as a regulatory requirement, to control access to the Power BI service very closely.

**Tip**Don't introduce too many barriers to obtaining a Power BI license. People who need to get work done will find a way, and that way may involve workarounds that aren't ideal. For instance, without a license to use the Power BI service, people may rely far too much on sharing files on a file system or via email when significantly better approaches are available.

## Cost management

Managing and optimizing the cost of cloud services, like Power BI, is an important activity. Here are several activities you may want to consider:

* Analyze who is using—and, more to the point, not using—their allocated Power BI licenses and make necessary adjustments. Power BI usage is analyzed using the [activity log](https://docs.microsoft.com/en-us/power-bi/admin/service-admin-auditing).
* Analyze the cost effectiveness of [Premium capacity](https://docs.microsoft.com/en-us/power-bi/admin/service-premium-what-is) or [Premium Per User](https://docs.microsoft.com/en-us/power-bi/admin/service-premium-per-user-faq#using-premium-per-user--ppu-). In addition to the [additional features](https://docs.microsoft.com/en-us/power-bi/admin/service-premium-per-user-faq#using-premium-per-user--ppu-), perform a cost/benefit analysis to determine whether Premium licensing is more cost-effective when there are a large number of consumers (unlimited content distribution is only available with Premium capacity, not PPU licensing).
* Carefully [monitor and manage Premium capacity](https://docs.microsoft.com/en-us/power-bi/admin/service-premium-gen2-metrics-app). Understanding usage patterns over time will allow you to predict when to purchase [additional capacity](https://docs.microsoft.com/en-us/power-bi/admin/service-premium-what-is#capacity-nodes). For example, you may choose to scale up a single capacity from a P1 to P2, or scale out from one P1 capacity to two P1 capacities.
* If there are occasional spikes in the level of usage, use of [autoscale](https://docs.microsoft.com/en-us/power-bi/admin/service-premium-auto-scale) with [Power BI Premium Gen 2](https://docs.microsoft.com/en-us/power-bi/admin/service-premium-concepts) is recommended. It will scale up capacity resources for 24 hours, then scale them back down to normal levels (provided that sustained activity isn't present). Manage autoscale cost by constraining the maximum number of v-cores, and/or with spending limits set in Azure (because autoscale is supported by the Azure Power BI Embedded service). Due to the pricing model, autoscale is best suited to handle occasional unplanned increases in usage.
* For Azure data sources, co-locate them in the same region as your Power BI tenant whenever possible. It will avoid incurring [Azure egress charges](https://azure.microsoft.com/pricing/details/bandwidth/), which are minimal, but at scale can be considerable.

## Security and data protection

Security and data protection are joint responsibilities among all content creators, consumers, as well as administrators. That's no small task because there's sensitive information everywhere: personal data, customer data, or customer-authored data, protected health information, intellectual property, proprietary organizational information, just to name a few. Governmental, industry, and contractual regulations may have a big impact on the [governance](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-governance) guidelines and policies that you create related to security.

The [Power BI security whitepaper](https://docs.microsoft.com/en-us/power-bi/guidance/whitepaper-powerbi-security) is an excellent resource for understanding the breadth of considerations, including aspects that Microsoft manages. This section will introduce several topics that customers are responsible for managing.

### User responsibilities

Some organizations ask Power BI users to accept a self-service user acknowledgment. This is a document that explains the user's responsibilities and expectations for safeguarding organizational data. One way to automate its implementation is with an [Azure Active Directory terms of use policy](https://docs.microsoft.com/en-us/azure/active-directory/conditional-access/terms-of-use). The user is required to agree to the policy before they are permitted to visit the Power BI service for the first time (or on a recurring basis, like an annual renewal).

### Data security

In a [cloud shared responsibility model](https://docs.microsoft.com/en-us/azure/security/fundamentals/shared-responsibility), securing the data itself is always the responsibility of the customer. With a self-service BI platform, self-service content creators have responsibility for properly securing the content that's shared with colleagues. The COE should provide [documentation and training](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-mentoring-and-user-enablement) where relevant to assist content creators with best practices (particularly situations for dealing with ultra-sensitive data).

Administrators can be help by following best practices themselves, and by raising concerns when they see issues that could be discovered when [managing workspaces](https://docs.microsoft.com/en-us/power-bi/admin/service-admin-portal#workspaces), [auditing user activities](https://docs.microsoft.com/en-us/power-bi/admin/service-admin-auditing), or managing [gateway credentials and users](https://docs.microsoft.com/en-us/power-bi/connect-data/service-gateway-data-sources#add-a-data-source). There are also a several [tenant settings](https://docs.microsoft.com/en-us/power-bi/admin/service-admin-portal#tenant-settings) that are usually restricted except for a few users (for instance, the ability to [publish to web](https://docs.microsoft.com/en-us/power-bi/admin/service-admin-portal#publish-to-web) or the ability to [publish apps to the entire organization](https://docs.microsoft.com/en-us/power-bi/admin/service-admin-portal#publish-content-packs-and-apps-to-the-entire-organization)).

### External guest users

External users—such as partners, customers, vendors, and consultants—are a very common occurrence for some organizations, and very rare for others. How you handle external users is a governance decision.

External user access is controlled by [tenant settings](https://docs.microsoft.com/en-us/power-bi/admin/service-admin-portal#export-and-sharing-settings) in the Power BI service as well as certain Azure Active Directory settings. For details of external user considerations, review the [Distribute Power BI content to external guest users using Azure Active Directory B2B](https://docs.microsoft.com/en-us/power-bi/guidance/whitepaper-azure-b2b-power-bi) whitepaper.

### Information protection

Power BI supports capabilities for information protection and data loss prevention through its integration with:

* [Microsoft Integration Protection](https://docs.microsoft.com/en-us/microsoft-365/compliance/information-protection) (MIP), which is a collection of features and capabilities with an objective to discover, classify, and protect sensitive information. Its philosophy is to know your data, protect your data, prevent data loss, and govern your data.
* [Microsoft Cloud App Security](https://docs.microsoft.com/en-us/cloud-app-security/what-is-cloud-app-security) (MCAS), which is a cloud access security broker (CASB). It can audit, monitor, and raise alerts based on certain activities. See the [monitoring](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-system-oversight#monitoring) section later in this article for examples of how MCAS can be used for oversight of the Power BI service.

Power BI's information protection capabilities are built upon [sensitivity labels](https://docs.microsoft.com/en-us/power-bi/guidance/whitepaper-powerbi-security#data-loss-prevention-dlp). Sensitivity labels are an important building block for data protection, data retention, data loss prevention, compliance, and insider risk management for Microsoft 365 services (including Power BI, as well as other Microsoft services).

**Important**A sensitivity label offers powerful data protection capabilities. However, it's not a replacement for standard data security practices, such as workspace roles, app security, individual item sharing, or row-level security.

The power of sensitivity labels is:

* Automated data loss prevention within the Power BI service, for instance, when [Cloud App Security](https://docs.microsoft.com/en-us/power-bi/admin/service-security-using-microsoft-cloud-app-security-controls) can invoke a policy to prohibit a file download based on a sensitivity label.
* Automated data loss prevention across system boundaries, such as when the [label follows the content](https://docs.microsoft.com/en-us/power-bi/admin/service-security-sensitivity-label-overview#introduction) from when it's exported from the Power BI service to Excel or PowerPoint.
* User education, so users know what they can and cannot do with the data. It's not automated. Rather, it should be handled with a data governance policy and user education.

There are several [tenant settings](https://docs.microsoft.com/en-us/power-bi/admin/service-admin-portal#information-protection) which relate to information protection. For more information, see the [Auditing and monitoring](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-system-oversight#auditing-and-monitoring) section in this article.

### Data residency

For organizations with requirements to store data within a geographic region, Premium capacity (not PPU) can be [configured for a specific region](https://docs.microsoft.com/en-us/power-bi/guidance/whitepaper-powerbi-security#data-residency) that's different from the region of the Power BI home tenant.

### Encryption keys

Microsoft handles encryption of data at rest in Microsoft data centers with transparent server-side encryption and auto-rotation of certificates. For customers with regulatory requirements to [manage the Premium encryption key themselves](https://docs.microsoft.com/en-us/power-bi/admin/service-encryption-byok), Premium capacity can be configured to use [Azure Key Vault](https://docs.microsoft.com/en-us/azure/key-vault/general/basic-concepts). Using customer-managed keys—also known as bring-your-own-key or BYOK—is a precaution to ensure that, in the event of a human error by a service operator, customer data cannot be exposed.

Note that [Premium Per User](https://docs.microsoft.com/en-us/power-bi/admin/service-premium-per-user-faq#using-premium-per-user--ppu-) only supports BYOK when it's enabled for the entire Power BI tenant.

## Auditing and monitoring

A wealth of metadata is available for understanding what's happening within your Power BI tenant. The primary source of information is from the Power BI [activity log](https://docs.microsoft.com/en-us/power-bi/admin/service-admin-auditing), which captures information about many different types of activities that users perform.

There are also a variety of [REST APIs](https://docs.microsoft.com/en-us/rest/api/power-bi/) that provide additional information about workspaces, apps, datasets, and more. Of particular interest to administrators are the [admin APIs](https://docs.microsoft.com/en-us/rest/api/power-bi/admin). These APIs provide a means to extract metadata for the entire tenant. The [Power BI Management Module](https://docs.microsoft.com/en-us/powershell/power-bi/overview?view=powerbi-ps&preserve-view=true) is a set of PowerShell commands which make it easier to obtain metadata rather than dealing directly with the APIs. However, substantially more information is available directly from the APIs.

Long-term [usage and performance insights](https://powerbi.microsoft.com/blog/announcing-long-term-usage-and-performance-insights-public-preview/) are also available for workspaces backed by [Premium capacity](https://docs.microsoft.com/en-us/power-bi/admin/service-premium-what-is). Administrators can analyze dataset activity, performance, and behavior. This capability is integrated with [Azure Log Analytics](https://docs.microsoft.com/en-us/azure/azure-monitor/logs/log-analytics-tutorial).

### Auditing

Auditing data is valuable for informing and tracking your adoption goals, helping the COE be more effective, ideas for helpful documentation or new training, as well as for governance-related reporting.

The following table presents are a few ideas of what you can do with the information available from the Power BI activity log and APIs:

|  |  |
| --- | --- |
| **Category of Auditing Data** | **Type of Questions** |
| Usage patterns and adoption | What is the most often-used content, and by whom?How many users are active?Are report views trending up or down?Is there underutilized or abandoned content?Are viewers using browser or mobile apps more often?When is content published or updated, and by whom? |
| Governance, security, and compliance | When are workspace roles updated, and by whom?How many external users are accessing content?Who added or updated a sensitivity label?When does a tenant setting change, and by whom?What percentage of report views are based on certified datasets?What percentage of datasets support more than one report?How frequently is content downloaded, and by whom?Who generated an embed code for publish to web? |
| Architecture reporting and analysis | How many workspaces exist by type?How many reports exist by type?When is a gateway or data source created or updated? |
| User education and training opportunities | Who started a Power BI trial?Who is doing too much sharing from their personal workspace?Who is publishing a lot of new datasets?Who is doing a lot of exporting? |

When considering needs for creating auditing reports, consider the following:

* What does success mean?
* What behaviors do you want to encourage?
* What do you want people to start doing?
* What do you want people to stop doing?

**Important**The raw data files that contain the auditing data should be stored in a very secure location, preferably one which is immutable (allowing no modifications or deletions). Immutable storage allows your auditors to rely on this data. A service like [**Azure Data Lake Storage Gen2**](https://docs.microsoft.com/en-us/azure/storage/blobs/data-lake-storage-introduction) is a flexible and low-cost alternative for this purpose.

### Monitoring

[Microsoft Cloud App Security (MCAS)](https://powerbi.microsoft.com/blog/get-up-to-speed-with-power-bi-and-microsoft-cloud-app-security/) is a cloud access security broker (CASB) that allows administrators to perform activities such as:

* Audit, monitor, and raise alerts based on activities.
* Create data loss prevention policies.
* Detect unusual behaviors and risky sessions.
* Limit activities performed by applications (in conjunction with [Azure Active Directory conditional access app control](https://docs.microsoft.com/en-us/cloud-app-security/proxy-intro-aad)).

Some very powerful [Power BI monitoring and protection](https://techcommunity.microsoft.com/t5/security-compliance-and-identity/protect-your-power-bi-instance-using-microsoft-cloud-app/ba-p/2166872) capabilities are available with MCAS. For example, you can:

* Prohibit all—or certain users—from downloading a file from the Power BI service when a specific sensitivity label is assigned.
* Receive an alert whenever a tenant setting is updated in the Power BI service (for instance, an administrative activity is detected).
* Detect when suspicious or unusual behaviors have occurred, such as massive file downloads or an unusual number of sharing operations in the Power BI service.
* Search the activity log for specific activities relating to content with a specific sensitivity label assigned, such as exports from the Power BI service.
* Be notified when risky sessions are occurring, such as when the same user account connects from different geographical areas in a narrow time window.
* Determine when someone outside a predefined security group views specific content in the Power BI service.

**Caution**Licensing, cost, and administrative permissions for MCAS are all handled separately from Power BI. You can create an [**application-specific admin**](https://docs.microsoft.com/en-us/cloud-app-security/manage-admins#built-in-cloud-app-security-admin-roles) with permissions scoped to monitoring just the Power BI service.

## Planning for change

Every month, new Power BI features and functionality are released. To be effective, it's crucial for those involved with system oversight to stay current.

The [Power BI blog](https://powerbi.microsoft.com/blog/) is the best place for customers to monitor announcements and new releases.

The [Power BI release plan](https://powerbi.microsoft.com/roadmap/) is where customers can find the public roadmap for future features and estimated dates. Sometimes a change that's coming is so important that it's useful to start planning for it well in advance. The planning cycle is in semesters: April-September, and October-March.

**Important**It's difficult to overestimate the importance of staying current. Being a few months behind on announcements can make it difficult to properly manage the Power BI service and support the user population efficiently.

## Considerations and key actions

Considerations and key actions you can take to improve system oversight:

* Verify who is permitted to be a Power BI administrator. If possible, reduce the number of people granted this role if it's more than a few people.
* If you have people who occasionally need Power BI administrator rights, consider implementing [Privileged Identity Management](https://docs.microsoft.com/en-us/azure/active-directory/privileged-identity-management/pim-configure) (PIM) in Azure Active Directory. It's designed to assign just-in-time role permissions that expire after a few hours.
* Check the status of cross-training and documentation in place for handling Power BI administration responsibilities.

Considerations and key actions you can take to improve management of the Power BI service:

* Conduct a review of all tenant settings to ensure they are aligned with [data culture](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-data-culture) objectives and [governance](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-governance) guidelines and policies. Verify which groups are assigned for each setting.
* Document the tenant settings for the internal Power BI community and post it in the centralized portal. Include which groups a user would need to request to be able to use a feature.
* When user resources are established, as described in the [Mentoring and user enablement](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-mentoring-and-user-enablement) article, update the [tenant setting](https://docs.microsoft.com/en-us/power-bi/admin/service-admin-portal#help-and-support-settings) to customize the links under the **Get Help** menu option. It will direct users to your documentation, community, and help.

Considerations and key actions you can take to improve management of user machines and devices:

* Review your process for how onboarding of new content creators is handled. Determine if new requests for software, such as Power BI Desktop, and user licenses (Power BI Pro or Premium Per User) can be handled together. It can simplify onboarding since new content creators won't always know what to ask for.
* Ensure an automated process is in place to install and update software, drivers, and settings to ensure all users have the same version.

Considerations and key actions you can take for data architecture planning:

* Assess what your end-to-end data architecture looks like. Make sure you're clear on:
	+ How Power BI is currently used by the different business units in your organization versus how you want Power BI to be used. Determine if there's a gap.
	+ If there are any risks that should be addressed.
	+ If there are any high-maintenance situations to be addressed.
	+ What data sources are important for Power BI users, and how they are documented and discovered.
* Review existing gateways that are used in your organization. Verify that gateway administrators and users are set correctly. Verify who is supporting each gateway, and that there's a reliable process in place to keep the gateway servers up to date.
* Check the number of personal gateways that are in use, and by whom. If there's significant usage, take steps to move towards use of the standard mode gateway.

Considerations and key actions you can take to improve management of user licenses:

* Review the process to request a user license, including any prerequisites.
* Clarify whether self-service licensing purchasing is enabled.
* Confirm whether Power BI Pro and Premium Per User trials are enabled or disabled.

Considerations and key actions you can take to improve cost management:

* Determine what the cost management objectives are and how to balance cost, features, usage patterns, and effective utilization of resources.
* Ensure you have access to the activity log data to assist with cost analysis.
* Schedule a routine process to evaluate costs, at least annually.

Considerations and key actions you can take to improve security and data protection:

* Clarify exactly what the expectations are for data protection, and ensure those expectations are communicated to the community of users.
* Understand and document the organizational policies around sharing Power BI content with external users, and ensure that Power BI service settings support those policies.
* If they do not currently exist, begin the process of deciding on sensitivity labels. Involve the relevant IT teams for decision-making and configuration in Microsoft 365.
* Investigate the use of Microsoft Cloud App Security to monitor user behavior and activities in the Power BI service.

Considerations and key actions you can take to begin or improve auditing and monitoring:

* Begin retrieving data from the Power BI activity log if you are not currently compiling the raw data. The easiest way to get started is to use the [Get-PowerBIActivityEvent](https://docs.microsoft.com/en-us/powershell/module/microsoftpowerbimgmt.admin/get-powerbiactivityevent?view=powerbi-ps&preserve-view=true) PowerShell cmdlet included with the Power BI Management Module. Retrieve and store the raw data without filtering or formatting, to ensure that all data elements are available for future analysis. A file system or data lake is an ideal location.
* Over time, determine what additional auditing data would be helpful to complement the activity log data.

## Maturity levels

The following maturity levels will help you assess the current state of your Power BI system oversight:

|  |  |
| --- | --- |
| **Level** | **State of Power BI system oversight** |
| 100: Initial | Tenant settings are configured independently by one or more administrators based on their best judgment.Architecture needs, such as gateways and capacities, are satisfied on an as-needed basis, though without a strategic plan.Power BI activity logs are unused, or selectively used for tactical purposes. |
| 200: Repeatable | Tenant settings are reviewed on a regular basis, and purposefully align with established governance guidelines and policies.A small number of specific administrators are selected, and they have a good understanding of what users are trying to accomplish.An effective process exists for users to request licenses and software.Sensitivity labels are configured in Microsoft 365, though usage of labels remains inconsistent. |
| 300: Defined | The tenant settings are fully documented in the community portal for users to reference, including how to request access to the correct groups.Cross-training and documentation exists for administrators to ensure continuity and stability.Sensitivity labels are assigned to content consistently.An automated process is in place to export Power BI activity log and API data to a secure location for reporting and auditing. |
| 400: Capable | Automated policies are configured and actively monitored in Microsoft Cloud App Security for data loss prevention.Administrators work closely with the COE and governance teams to provide oversight of Power BI with an emphasis on user empowerment within the requisite guardrails.Decentralized management of data architecture (such as gateways or capacity management) is effectively handled to balance agility and control.Power BI activity log and API data is actively analyzed to monitor and audit Power BI activities. Proactive action is taken based on the data. |
| 500: Efficient | Regular cost management analysis is done to ensure user needs are met in a cost-effective way.Power BI activity log and API data is actively used to inform and improve adoption efforts (in addition to monitoring and auditing of Power BI activities). |

# Conclusion

This article concludes the series on Power BI adoption. The strategic and tactical considerations and action items presented in this series will assist you in your Power BI adoption efforts, and with creating a productive data culture in your organization.

This series covered the following aspects of adoption:

* [Adoption overview](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-overview)
* [Adoption maturity levels](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-maturity-levels)
* [Data culture](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-data-culture)
* [Executive sponsorship](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-executive-sponsorship)
* [Content ownership and management](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-content-ownership-and-management)
* [Content delivery scope](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-content-delivery-scope)
* [Center of Excellence](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-center-of-excellence)
* [Governance](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-governance)
* [Mentoring and enablement](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-mentoring-and-user-enablement)
* [Community of practice](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-community-of-practice)
* [User support](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-user-support)
* [System oversight](https://docs.microsoft.com/en-us/power-bi/guidance/powerbi-adoption-roadmap-system-oversight)

The rest of this article includes extra adoption-related resources that you might find valuable.

## Power BI adoption framework

The [Power BI adoption framework](https://github.com/pbiaf/powerbiadoption) describes additional aspects of how to adopt Power BI in more detail. The original intent of the framework was to support Microsoft partners with a lightweight set of resources for use when helping their customers deploy and adopt Power BI.

The framework can augment this Power BI adoption roadmap series. The roadmap series focuses on the why and what of adopting Power BI, more so than the how.

## Enterprise deployment whitepaper

The [Planning a Power BI enterprise deployment](https://aka.ms/PBIEnterpriseDeploymentWP) whitepaper provides a comprehensive overview for Power BI implementers. Its primary goal is awareness of options, key considerations, decisions, and best practices. Because of the breadth of content, different sections of the whitepaper will appeal to managers, IT professionals, and self-service authors. The whitepaper is updated every 12-24 months.

The whitepaper goes deeper into the what and how of adopting Power BI, with a strong focus on technology. When you've finished reading the series of Power BI adoption articles, the whitepaper will fill you in with extra information to help put your plans into action.

## Microsoft's BI transformation

Consider reading about [Microsoft's journey and experience with driving a data culture](https://docs.microsoft.com/en-us/power-bi/guidance/center-of-excellence-microsoft-business-intelligence-transformation). This article describes the importance of two terms: discipline at the core and flexibility at the edge. It also shares Microsoft's views and experience about the importance of establishing a COE.

## Power Platform adoption

The Power Platform team has an excellent set of adoption-related content. Its primary focus is on Power Apps, Power Automate, and Power Virtual Agents. Many of the ideas presented in this content can be applied to Power BI also.

The [Power CAT Adoption Maturity Model](https://powerapps.microsoft.com/blog/power-cat-adoption-maturity-model-repeatable-patterns-for-successful-power-platform-adoption/), published by the Power CAT team, describes repeatable patterns for successful Power Platform adoption.

The [Power Platform Center of Excellence Starter Kit](https://docs.microsoft.com/en-us/power-platform/guidance/coe/starter-kit) is a collection of components and tools to help you develop a strategy for adopting and supporting Microsoft Power Platform.

The [Power Platform adoption best practices](https://docs.microsoft.com/en-us/power-platform/guidance/adoption/methodology) includes a helpful set of documentation and best practices to help you align business and technical strategies.

The [Power Platform adoption framework](https://github.com/PowerPlatformAF/PowerPlatformAF/wiki) is a community-driven project with excellent resources on adoption of Power Platform services at scale.

## Microsoft 365 and Azure adoption

You may also find useful adoption-related guidance published by other Microsoft technology teams.

* The [Maturity Model for Microsoft 365](https://docs.microsoft.com/en-us/microsoft-365/community/microsoft365-maturity-model--intro) provides information and resources to use capabilities more fully and efficiently.
* Microsoft Learn has a series of modules to [use the Microsoft service adoption framework to drive adoption in your enterprise](https://docs.microsoft.com/en-us/learn/paths/m365-service-adoption/).
* The [Microsoft Cloud Adoption Framework for Azure](https://docs.microsoft.com/en-us/azure/cloud-adoption-framework/) is a collection of documentation, implementation guidance, best practices, and tools to accelerate your cloud adoption journey.

A wide variety of other adoption guides for individual technologies can be found online. A few examples include:

* [Microsoft Teams adoption guide](https://teamworktools.azurewebsites.net/tft/#p=1).
* [Microsoft Security and Compliance adoption guide](https://teamworktools.azurewebsites.net/sec/).
* [SharePoint Adoption Resources](https://resources.techcommunity.microsoft.com/resources/sharepoint-adoption/).

## Industry guidance

The [Data Management Maturity (DMM) model](https://cmmiinstitute.com/data-management-maturity) is a paid resource from ISACA. It's a comprehensive framework of data management practices in six key categories. It's designed to helps organizations benchmark their capabilities, identify strengths and gaps, and leverage their data assets to improve business performance.

The [Data Management Book of Knowledge](https://www.dama.org/cpages/body-of-knowledge) (DMBOK2) is a book available for purchase from DAMA International. It contains a wealth of information about maturing your data management practices.

These resources aren't required to take advantage of the guidance provided in this Power BI adoption series. They're reputable resources should you wish to continue your journey.

## Partner community

Experienced Power BI partners are available to help your organization succeed with Power BI. To engage a Power BI partner, visit the [Power BI partner portal](https://powerbi.microsoft.com/partners/).