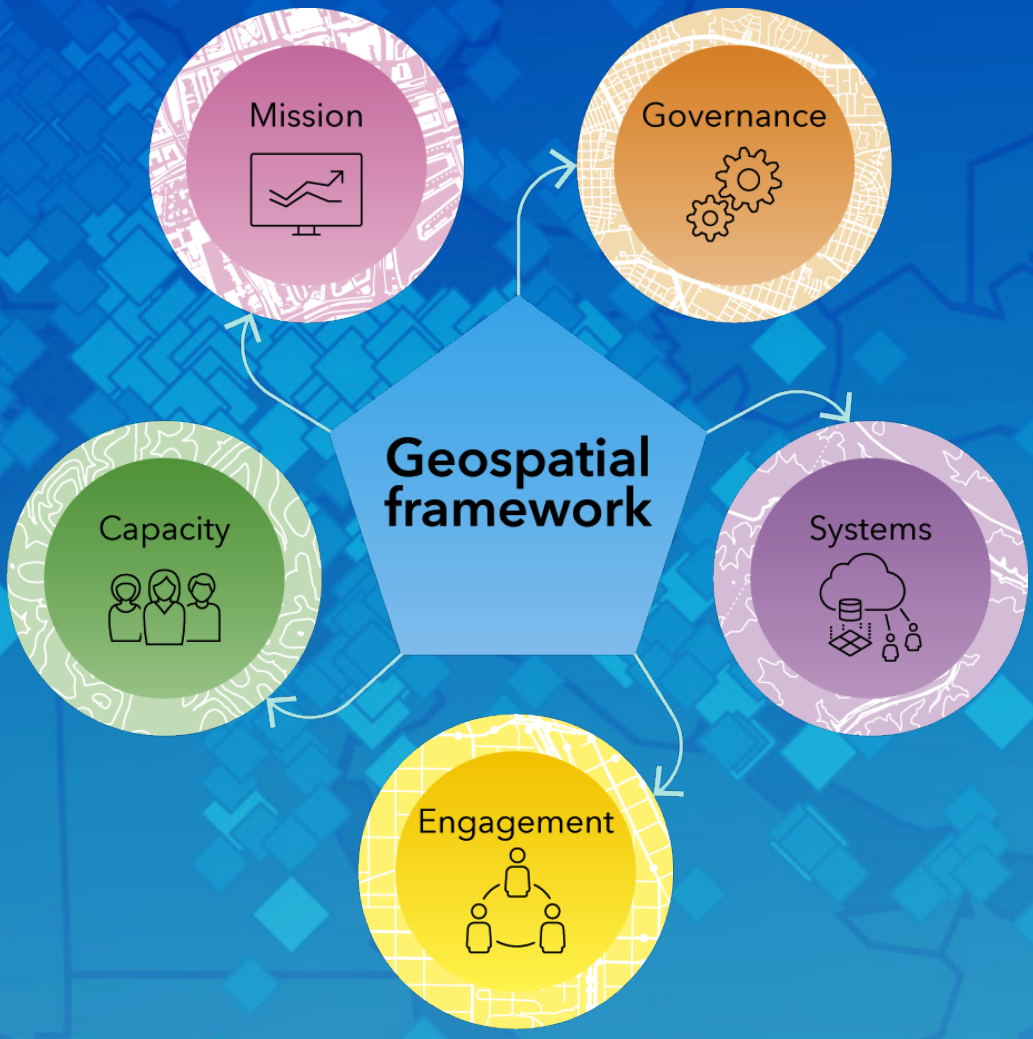
Governing ArcGIS®

A Guide for Higher Education

Supporting the mission of teaching, learning, research, and administration



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Introduction

This guide helps users in higher education implement effective strategies for governing ArcGIS in alignment with their organization's mission. Geospatial governance is the formal approach of policies, guidelines, and responsibilities that determine how an organization implements and supports GIS. This guide includes five stages of the geospatial governance process that can help you decide how to govern the use of your organization's resources:

- **Mission**–You will align your educational mission with a geospatial strategy that establishes a vision for GIS.
- **Governance**–You will establish policies, guidelines, and procedures for effective governance of GIS.
- **Systems**–You will learn how to implement a modern and robust geospatial system for new and existing deployments.
- **Engagement**–You will explore planning, communication, monitoring, and collaboration around GIS efforts and technology.
- **Capacity**–You will begin equipping a team of stakeholders with knowledge, skills, and resources to manage GIS.



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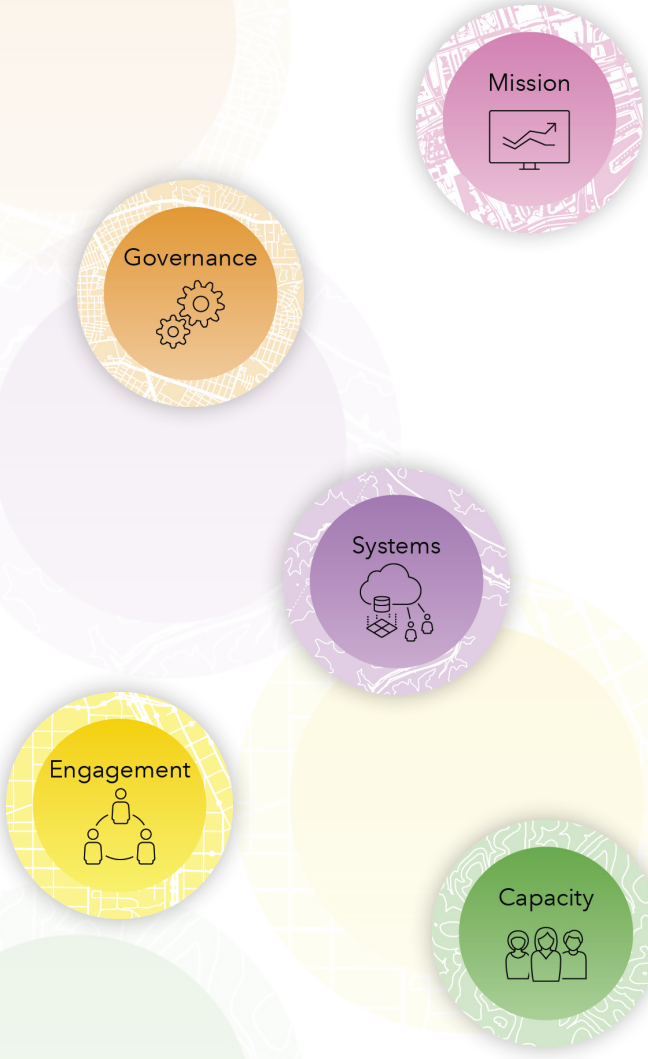
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Chapter 1

Mission



This chapter outlines how implementing a geospatial strategy and geospatial support system can enhance the mission of educational institutions. It establishes an overarching vision of how to govern geographic information system (GIS) technology to support teaching, learning, research, and administration.

IN THIS CHAPTER:

- Mission
- Empower anyone with GIS
- Make ArcGIS part of your enterprise IT strategy
- Collaborate with institutional stakeholders and knowledge holders
- Geospatial framework: A path to geospatial excellence

Mission

Higher education institutions aim to develop and apply knowledge through teaching, learning, research, and public engagement. This includes educating students, solving societal challenges through research, and contributing to society through public service. At its core, this mission is about fostering literacy, encouraging learning and discovery, and solving societal problems.

Geospatial technology encompasses tools, workflows, and techniques used to capture, analyze, and visualize location-based data. It can advance the mission of educational organizations in a variety of ways:

- Enhances education and learning objectives through spatial thinking and geospatial literacy
- Advances research through innovative geospatial analysis and visualization
- Supports service and civic engagement through data sharing and community engagement capabilities
- Promotes personal and professional development through geospatial skills applicable to any area of interest
- Improves institutional operations through location-aware decision-making

The following sections outline goals for institutional leaders and educators learning how geospatial technology should be perceived, managed, and governed to support the larger mission of the institution.

Empower anyone with GIS

Geospatial technology can help solve some of the world's toughest problems by showing how and where to act. All fields–engineering, history, public health, business, anthropology, and more–require the ability to gather, visualize, analyze, and present information in a spatial context.

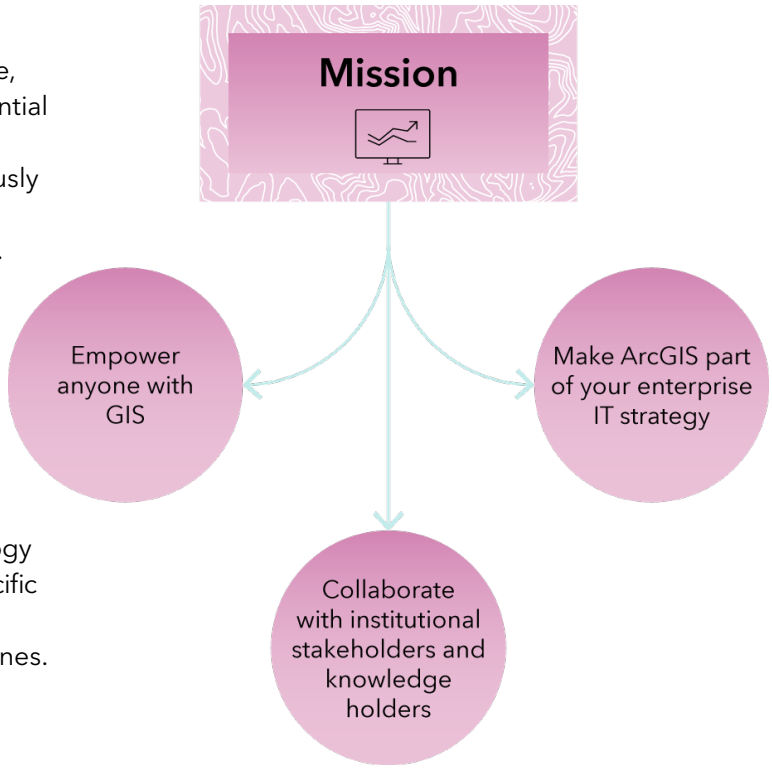
GIS should be considered an institutional resource, not a departmental tool. This means that the potential user base could be all students, faculty, and staff. While some academic disciplines are more obviously geospatially intensive, such as geography and environmental science, any discipline can use GIS.

Make ArcGIS part of your enterprise IT strategy

GIS is an evolving enterprise technology and should be viewed and managed accordingly. This system encompasses capabilities, software, data, technology infrastructure, people, and workflows that fulfill specific needs and help solve complex spatial problems—providing value to many departments and disciplines.

ArcGIS is an enterprise system that includes cloud, on-premises, mobile, desktop, and developer components. It is important that it is integrated into your institution's broader enterprise IT strategy. It requires a governance approach that includes access, availability, life cycle management of users and data, maintenance, and communication.

In addition, governance is not just about technology itself but also how you implement, collaborate, integrate, and work across various systems and policies on campus. The maintenance of this GIS system requires alignment with existing policies and guidelines that an institution has in place to handle data and users and comply with existing access, security, and privacy policies.



Collaborate with institutional stakeholders and knowledge holders

Effective use of ArcGIS technology requires collaboration across institutional constituents, including IT, GIS professionals, administrators, faculty, researchers, and students who manage and use this system.

Implementing and maintaining such a system requires a diverse set of skills that no one person may possess. It requires staff with enterprise IT skills to integrate it with other authoritative systems, such as identity and access management (IAM or SAML), and to comply with institutional policies and guidelines. It requires staff with enterprise administration skills to understand the operation of GIS at scale—for example, in software as a service (SaaS) or on-premises deployments. It may require GIS skills from those doing common GIS functions and tasks, such as mapping and visualization, spatial analysis, sharing, and presenting. It may require programming skills from those employing automation and application development. However, with these in place, the broader campus community may not need IT or GIS skills at all to use geospatial technology in their teaching, learning, research, and administration.

Collaboration among various constituents is key to successfully deploying, managing, and maintaining this system across roles and departments. This collaboration involves stakeholders in GIS, enterprise IT, and administration, as well as faculty, staff, and students.

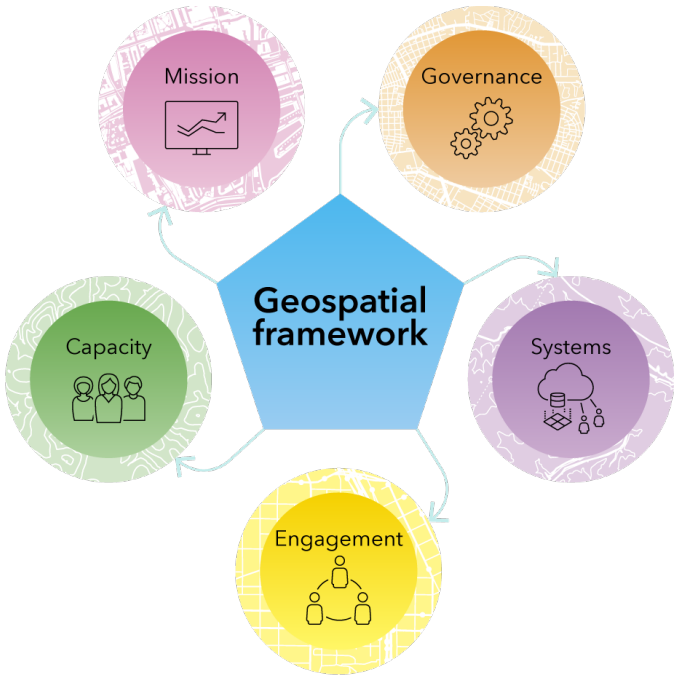
Geospatial framework: A path to geospatial excellence

Having a mission-driven, structured geospatial governance framework is required. Geospatial governance is a formal approach to creating policies, guidelines, and responsibilities that determine how your educational institution implements and supports GIS, including data, applications, processes, capabilities, and resources.

Through a geospatial framework, you can manage change by building trust, creating ownership and accountability, valuing the organization's intellectual property, and upholding best practices and standards.

Building a geospatial framework consists of five key steps:

1. Align educational mission with a geospatial strategy that establishes a vision for GIS.
2. Establish policies, guidelines, and procedures for effective governance of GIS.
3. Implement a modern and robust geospatial system.
4. Engage teams in planning, communication, monitoring, and collaboration around GIS efforts.
5. Equip stakeholders with the knowledge, skills, and resources to manage GIS at a sustainable capacity.



Geospatial technology can enhance a higher education institution's mission of teaching, learning, and research, benefiting many stakeholders across disciplines and departments. Modern GIS requires deployment, management, and maintenance by skilled professionals, as well as alignment with institutional policies and guidelines, achieved by collaboration between various stakeholders.

Now that you know how geospatial thinking and technology can support your institutional mission, you can set policies to guide ArcGIS governance, systems, engagement, and capacity.

Chapter 2

Governance



This chapter will focus on defining governance policies and concepts that apply to ArcGIS. Having a governance plan for managing ArcGIS is a key component in planning for institutional implementation, aligning GIS use with the organization's mission, and ensuring effective use of resources.

IN THIS CHAPTER:

- Governance
- What is ArcGIS governance?
- Why govern ArcGIS in higher education?
- Who governs ArcGIS?
- What is governed?
- How governance is established
- Governance principles
- Governance across the user life cycle
- Ongoing governance and continuous improvement

Governance

As outlined in chapter 1 ("Mission"), geospatial technology plays a critical role in advancing teaching, learning, research, and administration across higher education institutions. ArcGIS is no longer confined to a single department or discipline; it is an enterprise system that supports a broad and diverse community of students, faculty, researchers, and staff. As adoption grows, so does the need for clear direction, consistency, and accountability.

This chapter focuses on governing ArcGIS—establishing the policies, decision-making structures, and responsibilities that guide how ArcGIS is accessed, used, managed, and sustained over time. This institutional framework allows you to effectively scale ArcGIS use for broader enterprise adoption, align it with existing policies, and keep your entire IT infrastructure secure, reliable, and sustainable.

Governance is a foundational component of the geospatial framework introduced in chapter 1. It connects institutional mission and strategy to the practical realities of operating ArcGIS as a system (chapter 3) and supporting users through communication, engagement, and monitoring (chapter 4). Without governance, system configuration and user engagement efforts become reactive and fragmented. With governance in place, institutions can make informed, consistent decisions that support long-term success.

In this chapter, you will learn the following concepts:

- What ArcGIS governance means in higher education
- Why governance of ArcGIS is essential
- How governance establishes clarity around roles, responsibilities, and expectations

What is ArcGIS governance?

In the context of higher education, governance defines who makes decisions, what is governed, and how policies are established, communicated, and reviewed. ArcGIS governance is the institutional framework for decision-making and accountability that guides acceptable conduct and practices.

ArcGIS governance encompasses institution-wide standards and policies related to access permissions, user information, communication of responsibilities, and system monitoring and maintenance.

- How access to ArcGIS is provided and revoked
- How user information is managed
- How content—data, services, maps, and applications—is created, shared, retained, and deleted
- How communication with constituents about expectations and responsibilities occurs
- How usage is monitored to ensure a healthy and sustainable system

Governance is not the same as system administration. Governance establishes direction, guardrails, and expectations. Administration implements and enforces those decisions through configuration, workflows, and operational practices. This distinction is critical: governance decides what should happen and why, while administration focuses on how it happens. Chapter 3 builds on this governance foundation by describing how policies are operationalized through ArcGIS system configuration and management.

In higher education, governance must also account for the cyclical nature of the academic environment. Each year, there are new students, graduating cohorts, faculty transitions, research projects, and collaborations. Governance provides continuity amid this constant change by ensuring that policies and responsibilities persist even as individuals and roles evolve.

Effective governance does not require inventing new rules in isolation. Instead, ArcGIS governance should align with and extend existing institutional policies. Your institution likely already has policies for identity management, data stewardship, privacy, security, records retention, and communication for other enterprise systems like email, learning management systems, and data storage platforms.

Why govern ArcGIS in higher education?

A governance plan for ArcGIS is essential for institutions using ArcGIS as a trusted, enterprise-supported system. Governance is what transforms ArcGIS from a collection of tools into a strategic capability that can grow sustainably across the institution.

Governance helps institutions do the following:

- Plan for growth and scale—As ArcGIS adoption expands across disciplines and administrative units, governance ensures consistent access, predictable usage, and manageable demand on resources.
- Set clear expectations—Governance establishes reasonable expectations for how ArcGIS should be used, what users are responsible for, and what support the institution provides.
- Support informed decision-making—With defined policies and monitoring practices, institutions can make data-driven decisions about access models, storage, credits, and future investments.
- Reduce risk and ensure compliance—Governance helps institutions align ArcGIS usage with institutional, legal, licensing, security, and privacy requirements, reducing the risk of misuse, data loss, or noncompliance.
- Provide continuity in a dynamic environment—Given the constant onboarding and offboarding of students, faculty, and staff, governance ensures that content, accounts, and access are managed consistently over time.

Governance is especially important in higher education because ArcGIS often serves multiple purposes simultaneously: instructional use, research projects, administrative workflows, and public engagement. Stakeholders in these use cases may have different expectations, privacy concerns, and life cycle requirements. Governance provides a common framework for balancing flexibility with security.

The governance policies defined in this chapter directly inform how governance decisions are implemented and how governance standards are communicated. Governance ensures that ArcGIS remains aligned with the institutional mission, operationally sustainable, and trusted by the community it serves.

Who governs ArcGIS?

Effective governance of ArcGIS in higher education requires shared ownership and clearly defined accountability. Because ArcGIS supports teaching, learning, research, and administrative operations, governance cannot reside within a single department or role. Instead, it must reflect the institution's organizational structure, policies, and culture, while allowing for coordinated decision-making.

Governance is typically exercised through a cross-functional governance team or council. This group is responsible for establishing policies, setting expectations, and ensuring alignment with institutional priorities. Governance teams do not manage day-to-day system operations; rather, they define the guardrails within which ArcGIS is administered and used. Chapter 3 builds on this foundation by describing how governance decisions are implemented by administrators through system configuration, automation, and operational practices.

Governance model overview

A governance team provides a formal structure for the following actions:

- Defining institutional policies related to ArcGIS access, use, and security
- Establishing accountability for governance decisions
- Coordinating across academic, administrative, and IT domains
- Revisiting policies as institutional needs and technology evolve

The goal of governance is not to limit access or innovation, but to ensure that ArcGIS is managed responsibly, consistently, and sustainably as adoption grows across the institution.

Governance roles

Institutions vary widely in size, structure, and maturity. The roles described below represent functional responsibilities, not required job titles. In some institutions, one person may fulfill multiple roles; in others, responsibilities may be distributed across teams.

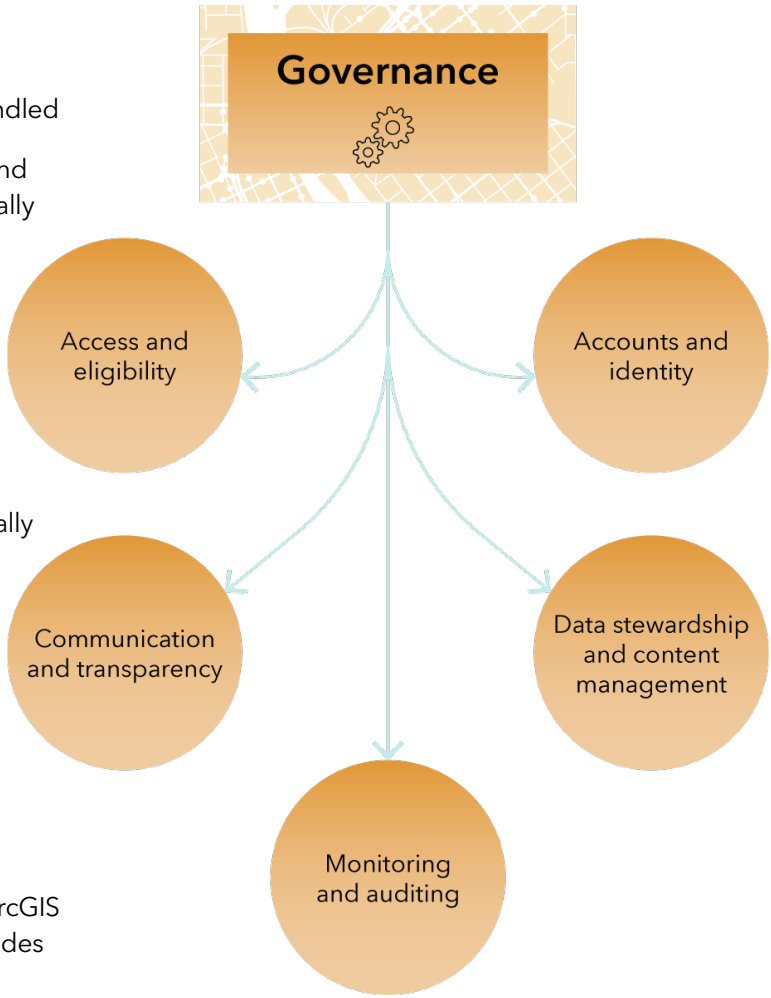
- GIS leadership and geospatial support—Coordinate governance activities and serve as the primary liaison between governance, system administrators, and the user community. This role often facilitates governance discussions, ensures policies are documented, and helps translate governance decisions into operational practice.
- Enterprise IT and security representatives—Ensure that ArcGIS governance aligns with institutional standards for identity management, cybersecurity, privacy, accessibility, and infrastructure. This role helps reduce risk and ensures ArcGIS is treated consistently with other enterprise systems.
- Data and content stewards—Provide guidance on stewardship of institutional data and content, including authority, ownership, metadata, retention, and disposal. These roles are especially important for administrative, research, and authoritative datasets that have long-term value or compliance requirements.
- Academic and research representatives—Represent instructional and research perspectives, ensuring governance policies support legitimate academic use cases while remaining sustainable. Their involvement helps balance flexibility for teaching and research with institutional stewardship responsibilities.
- Operations representatives—Represent campus facility, finance, and safety. Their roles focus on managing operations and infrastructure.
- Legal, records, or compliance stakeholders (as needed)—Provide guidance on records retention, contractual obligations, sponsored research requirements, and privacy considerations that influence governance decisions.

Decision rights and accountability

For governance to be effective, decision-making authority must be clearly defined. Governance teams are typically accountable for decisions such as the following:

- Who is eligible for ArcGIS access and under what conditions
- How accounts and affiliations are managed over time
- How content is created, shared, retained, archived, or deleted
- How usage is monitored and evaluated
- How exceptions to established policies are handled

Governance is an ongoing responsibility. Policies and decision frameworks should be revisited periodically to reflect changes in institutional priorities, technology capabilities, and patterns of use.



What is governed?

Governance defines what decisions are made and what areas are subject to institutional policy. For ArcGIS in higher education, governance typically focuses on a set of core decisions that together support responsible, scalable use of the system.

These decision areas are not specific technologies or configurations. Chapter 3 describes how these governance decisions are implemented operationally, while chapter 4 describes how they are communicated and reinforced.

Access and eligibility

Governance establishes who is eligible to access ArcGIS and how access is granted and revoked. This includes the following:

- Eligibility criteria for students, faculty, staff, and affiliates
- Alignment with institutional identity and access management systems
- Consideration of life cycle events such as enrollment changes, graduation, or separation

Clear access policies help ensure that ArcGIS remains available to authorized users while reducing administrative burden and risk.

Accounts and identity

Account governance defines how user identities are managed within ArcGIS, including the following:

- Account creation and life cycle management
- Privacy and security considerations for user information
- Alignment with institutional policies governing accounts for other enterprise systems

These decisions directly inform the system configuration decisions you will make and support scalable onboarding and offboarding.

Data stewardship and content management

In the context of ArcGIS, content includes data, services, maps, applications, and other items created or shared within the system. Governance establishes expectations for the following:

- Authority and ownership of content
- Retention, archiving, and disposal of content
- Storage limits and responsible use of shared resources
- Metadata and documentation standards

Data stewardship is especially important in higher education, where content may be created by students, faculty, researchers, and staff with varying account life cycles and institutional obligations.

Communication and transparency

Governance defines how expectations, responsibilities, and policies are communicated to users. This includes the following:

- Publishing governance policies and guidelines
- Educating users about their responsibilities
- Communicating changes, updates, and life cycle events

Chapter 4 expands on this domain by describing specific communication strategies and engagement practices.

Monitoring and auditing

Governance also establishes expectations for monitoring ArcGIS usage to ensure system health and sustainability. This includes the following:

- Periodically reviewing usage patterns
- Monitoring of storage, credits, and activity
- Using monitoring insights to inform governance decisions

Monitoring is a mechanism for understanding system health, tracking growth, demonstrating value, and planning for future needs. It is not punitive but rather a means to maintain awareness and address issues before they become problems.

With governance roles defined and governance domains identified, institutions can move from deciding what should be governed to deciding how governance is established and maintained. The next section describes how institutions can develop, implement, and evolve ArcGIS governance policies over time.

How governance is established

Establishing governance for ArcGIS is an incremental and iterative process, not a onetime exercise. Institutions do not need to create an entirely new governance framework from scratch. Instead, effective ArcGIS governance builds on institutional policies, practices, and decision-making structures already in place for other enterprise systems.



This section outlines a practical approach to establishing governance that aligns with the institutional mission (chapter 1), informs system configuration and operations (chapter 3), and supports communication and engagement practices (chapter 4).

1. Identify a governance team

The first step in establishing governance is to formalize responsibility. Institutional leaders should identify a governance team or council that is accountable for defining and maintaining ArcGIS governance policies. This team should represent the key stakeholder groups and operate with a shared understanding of institutional goals and constraints.

At this stage, the focus is not on detailed technical decisions but agreeing on a shared purpose for ArcGIS governance, clear ownership of governance decisions, and alignment with institutional mission and policy frameworks.

2. Review existing institutional policies

First, review existing governance policies that apply to other enterprise systems at the institution. Most institutions already have policies governing access management, data stewardship, records retention, acceptable use, privacy, and communication for platforms such as email, learning management systems, or data sharing services.

Consider the following questions:

- What policies exist for managing access to institutional systems?
- How are accounts handled when individuals join or leave the institution?
- What are the expectations for retaining, archiving, or disposing of institutional data?
- How are users informed of their responsibilities and changes to systems?

The goal is to align ArcGIS governance with existing institutional standards, rather than introduce conflicting practices.

3. Define ArcGIS policies and guidelines

Once relevant institutional policies are identified, governance teams can define policies and guidelines specific to ArcGIS that interpret those standards for the ArcGIS environment. These policies should focus on the governance domains described in the previous section and reflect the academic context in which ArcGIS is used.

Policies should meet the following standards:

- Be clear, concise, and accessible
- Address the full life cycle of users and content—from onboarding to offboarding
- Balance flexibility for teaching, research, and campus operations with institutional administration and stewardship responsibilities

At this stage, institutional stakeholders define what the policies are and why they exist.

4. Align governance with system implementation

Governance decisions must be actionable. Once policies are defined, institutional leaders can assess their existing ArcGIS deployment to ensure it can support those policies. This alignment step bridges governance and implementation.

For new deployments, governance decisions inform how the ArcGIS system is configured from the outset. For existing deployments, governance may require revisiting established practices and introducing new workflows to achieve compliance.

Chapter 3 explores systemwide options for implementing governance decisions related to access, identity, content management, and monitoring.

5. Communicate and reinforce governance

Governance is only effective if it is understood and reinforced across the user community. Institutions should plan how governance policies will be communicated to users at key points in the life cycle: onboarding, active use, and offboarding.

Communication requires ongoing engagement, reinforcement, and monitoring to ensure policies remain visible and effective over time.

6. Ongoing evaluation and adaptation

Governance is not static. Institutions should establish a practice of periodic review and evaluation of governance policies and guidelines. Policies may need to evolve as ArcGIS adoption increases or shifts across disciplines, technology capabilities change, and institutional priorities or policies are updated.

Governance teams should revisit policies annually or when significant changes occur to ensure continued relevance and alignment.

Governance principles

Governance principles provide the foundational lens through which ArcGIS governance policies are developed, evaluated, and applied. Principles are intentionally guiding rather than prescriptive; they help institutions make consistent decisions across diverse use cases, disciplines, and user communities.

While specific policies may evolve over time, these principles establish continuity and ensure governance decisions remain aligned with institutional mission and values, as described in chapter 1.

Institutional alignment
ArcGIS governance should align with existing institutional policies and practices, not operate in isolation. Governance decisions related to access, data stewardship, privacy, security, and communication should reflect how similar enterprise systems are governed across the institution.

ArcGIS is one component of a broader institutional technology ecosystem. Treating it consistently with other enterprise platforms builds trust, reduces confusion, and simplifies administration.

Good stewardship of shared resources
ArcGIS is a shared institutional resource. Governance should promote responsible use of licenses, storage, and system capacity to ensure equitable access and long-term sustainability.

Stewardship includes the following practices:

- Being mindful of finite resources such as storage and credits
- Encouraging appropriate use based on role and need
- Promoting practices that prevent unnecessary duplication or waste

Good stewardship enables growth while protecting the system for future users.

Clarity of responsibility and accountability
Governance should clearly define who is responsible for what—from content ownership and metadata to managing access and life cycle events. Clear accountability reduces ambiguity and prevents governance decisions from becoming reactive or inconsistent.

Users, administrators, and governance teams each have responsibilities. Governance principles help ensure those responsibilities are understood and reinforced.

Life cycle-aware decision-making
Governance must account for the full life cycle of users, content, and groups—from creation and active use to transition and eventual removal. Decisions should not be made solely for the moment of onboarding or peak usage, but with an understanding of what happens over time.

Life cycle awareness is particularly critical in higher education, where turnover of users is expected and continuous.

Transparency and communication
Governance is most effective when policies and expectations are visible, understandable, and consistently communicated. Transparency builds trust and allows users to take ownership of their responsibilities.

Clear communication is reinforced through the engagement practices described in chapter 4 and should be treated as an integral part of governance, not an afterthought.

Flexibility with managed exceptions
No governance framework can anticipate every use case. Governance principles should allow for documented exceptions when justified, while maintaining overall consistency.

Managed flexibility ensures governance supports innovation in teaching and research without undermining institutional stewardship.

Governance across the user life cycle

Governance in higher education must account for the dynamic nature of the academic environment. Users regularly join, change roles, collaborate, and depart. Governance across the user life cycle ensures that access, content, and responsibilities are managed consistently at each stage.

The life cycle perspective introduced here informs both system implementation (chapter 3) and engagement practices (chapter 4).

Onboarding

Governance begins with onboarding. As users gain access to ArcGIS, governance policies define who is eligible for access, what level of access is appropriate, and what responsibilities users assume when using ArcGIS.

Effective onboarding sets expectations early, reduces confusion, and minimizes the need for manual intervention by administrators. Automated and scalable onboarding practices help enforce governance consistently as adoption grows.

Active use

During active use, governance focuses on responsible creation and management of content, appropriate sharing and collaboration, and ongoing stewardship of data, maps, applications, and groups.

Governance during this stage encourages users to manage their own content proactively, follow institutional standards, and make informed decisions about storage, sharing, and collaboration. Monitoring practices provide insight into usage patterns and inform future governance decisions.

Offboarding and transitions

Offboarding is one of the most critical—and often overlooked—phases of governance. As users graduate, change roles, or leave the institution, governance policies define when access should end, what happens to content and groups, and how ownership or stewardship is transferred or retired.

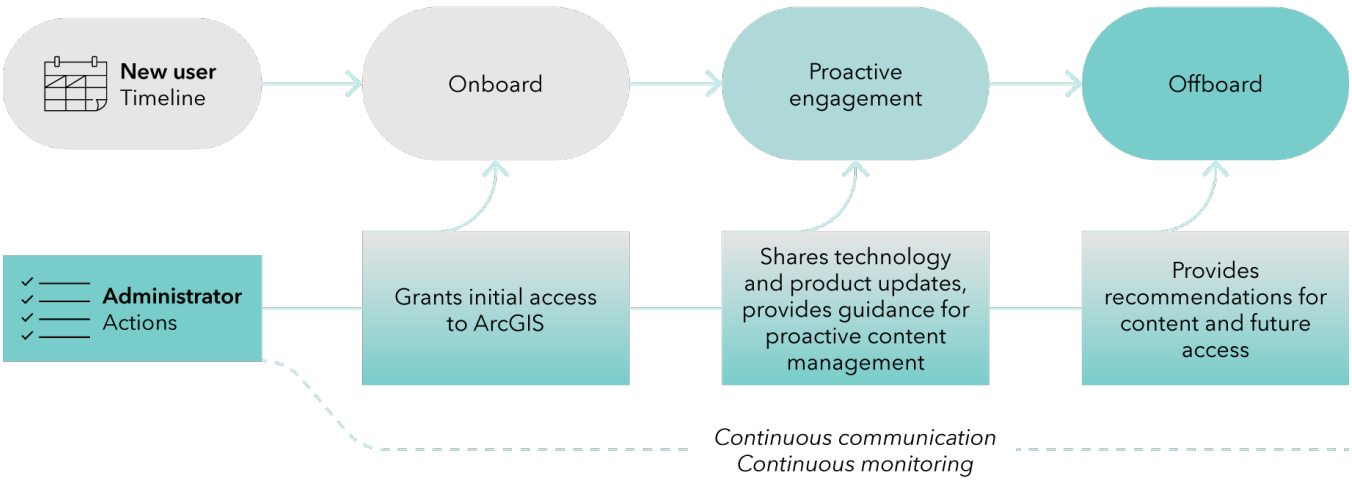
Clear offboarding governance prevents orphaned content, unmanaged storage growth, and security risks. Proactive communication and sufficient notice allow users to take appropriate action before departure.

Continuous reinforcement

Governance across the life cycle is not linear or static. Users may move between roles, collaborate across departments, or reenter the institution in new capacities. Governance must be reinforced continuously through communication, monitoring, and periodic review.

Chapter 4 expands on how institutions can support this reinforcement through engagement strategies, while chapter 3 describes how life cycle governance is operationalized within the ArcGIS system.

With governance principles established and life cycle considerations defined, institutions are prepared to evaluate and refine governance practices over time. The next section focuses on ongoing evaluation and continuous improvement of ArcGIS governance.



Ongoing governance and continuous improvement

Governance is not a onetime activity. As ArcGIS usage grows, evolves, and diversifies, governance policies and practices must also adapt. Ongoing governance ensures that ArcGIS continues to align with institutional mission, policies, and priorities while remaining sustainable and responsive to change.

Continuous improvement allows institutions to move from initial governance adoption to a mature governance practice—one that is proactive rather than reactive, informed by usage patterns, and grounded in institutional learning.

Periodic review of governance policies
Institutions should establish a regular cadence for reviewing ArcGIS governance policies and guidelines. At a minimum, governance should be revisited in the following scenarios:

- Annually
- When significant institutional policy changes occur
- When there are major shifts in ArcGIS usage, scale, or adoption
- After significant technological changes or new capabilities

Regular review ensures that policies remain relevant, clear, and aligned with current institutional needs. It also provides an opportunity to retire policies that no longer serve their intended purpose or to clarify areas that have created confusion.

Using monitoring insights to inform governance
Monitoring plays a critical role in continuous improvement. Usage insights—such as patterns of access, content growth, storage consumption, and activity trends—provide evidence that can guide governance decisions.

Monitoring should be used to do the following:

- Identify emerging patterns of use or misuse
- Understand where policies are effective or need refinement
- Anticipate future needs for system capacity or access

Rather than serving as an enforcement mechanism alone, monitoring supports informed governance by revealing how ArcGIS is actually used across the institution.

Adapting governance as the institution evolves
Higher education institutions are dynamic. New academic programs emerge, research priorities shift, technologies evolve, and user communities change. Governance must be flexible enough to accommodate these changes without sacrificing consistency or accountability.

Governance teams should expect to adjust policies as new use cases arise, revisit role definitions as responsibilities evolve, and refine life cycle practices as onboarding and offboarding patterns change.

This adaptability ensures governance remains supportive of innovation while maintaining institutional policies.

Reinforcing governance through practice
Governance is reinforced not only through written policies, but through consistent practice. Alignment between governance decisions, system configuration (chapter 3), and engagement practices (chapter 4) strengthens the credibility and effectiveness of governance over time.

When users experience governance as predictable, transparent, and fair, they are more likely to take ownership of their responsibilities and contribute to the sustainable use of ArcGIS.

Governance as an institutional capability
Ultimately, effective ArcGIS governance becomes an institutional capability—embedded into how technology is managed, supported, and evolved. Institutions that invest in ongoing governance position themselves to do the following:

- Sustain ArcGIS as an enterprise system
- Support long-term growth across disciplines
- Reduce risk and administrative burden
- Demonstrate the enduring value of geospatial technology

Governance maturity is achieved not through rigid enforcement, but through continual learning, collaboration, and alignment with institutional mission.

Governance provides the foundation that connects institutional mission to system implementation and user engagement. By defining decision-making structures, governance domains, guiding principles, and life cycle practices—and by committing to continuous improvement—institutions can ensure that ArcGIS remains a trusted, sustainable, and impactful component of their technology ecosystem.

With governance in place, institutions are prepared to turn policy into practice.

Take action

Use this checklist to create a summary of policies and guidelines applicable to ArcGIS in the following domains:

- Access and eligibility
- Accounts and identity
- Data stewardship and content management
- Communication and transparency
- Monitoring and auditing

Consider the following as you define your policies:

- Access and eligibility—Create policies for general access and eligibility. Include information on how ArcGIS is accessed and supported.
- Accounts and identity—Create policies for account information that include account provisioning, how long to keep user accounts, and how long accounts stay active after separation. There is no single correct answer for the process of offboarding. Think about your institutional policies that you researched earlier.
  - When is the right time to delete users?
  - Who is authorized to access software applications such as ArcGIS and for how long do they retain access?
  - What should an administrator do with the user's content and groups before deleting user accounts?
- Data stewardship and content management—Create policies for retention and disposal of content, as well as the amount of storage allowed. Include information such as the following:
  - How long should content be preserved at your institution?
  - When should content be deleted?
  - How should content be deleted?
  - How much data are users allowed to maintain in the system?

  Keep in mind that there is no one-size-fits-all solution. It varies depending on your organizational policies and standards.

You can review a sample message for users leaving the university: Messaging for ArcGIS Online users leaving the university (students, faculty, staff). This kind of communication can be shared with your users.

- Communication and transparency—Create policies for communication.
  - Proactively inform users of their responsibilities. Post guidelines and policies publicly.
  - Empower users within your organization to be self-sufficient and help themselves. Include information such as the following:
    - How to access ArcGIS
    - What to do with existing content and groups
    - How to dispose of their groups and content before they leave
    - What happens after graduation?
  - Provide updates. Include information such as the following:
    - When updates happen to any of the apps (ArcGIS Pro, web apps, mobile apps)
    - When new capabilities are added to ArcGIS and appropriate privileges to user roles are updated
    - When a product is being retired
- Monitoring and auditing—Create policies for monitoring.
  - How will you monitor ArcGIS?
  - How often will you analyze feature data store usage level, tracking credit consumption, app usage, and member activities?
  - Will you use ArcGIS Dashboards?

Next, chapter 3 will explore system deployment, and then chapter 4 will provide ideas for monitoring that can help you craft your institutional policies.

ArcGIS is an enterprise IT system and governance is integral to managing this system. The recommendations in this chapter can help you understand how governance is established.

Next, chapter 3 will explore system deployment and monitoring, in accordance with governance policies outlined in chapter 2.

Chapter 3
Systems



ArcGIS can be implemented and operated in multiple ways. Choosing the most efficient, robust, and scalable implementation for your institution is important, especially as more users learn and use the technology.

This chapter focuses on implementing ArcGIS as an enterprise system and operating it in compliance with the policies and guidelines established in the previous chapter.

THIS CHAPTER APPLIES TO TWO TYPES OF ORGANIZATIONS:

- New deployments—Institutions establishing ArcGIS for the first time. This includes a checklist of items to implement to achieve efficiency in managing the system.
- Existing deployment—Institutions with established ArcGIS environments that need to formalize and implement governance policies for user accounts, data retention, monitoring, and communication for maturing governance practices. This chapter will cover solutions and recommendations for managing the life cycle of content, users, and groups while maintaining good stewardship of ArcGIS resources.

IN THIS CHAPTER:

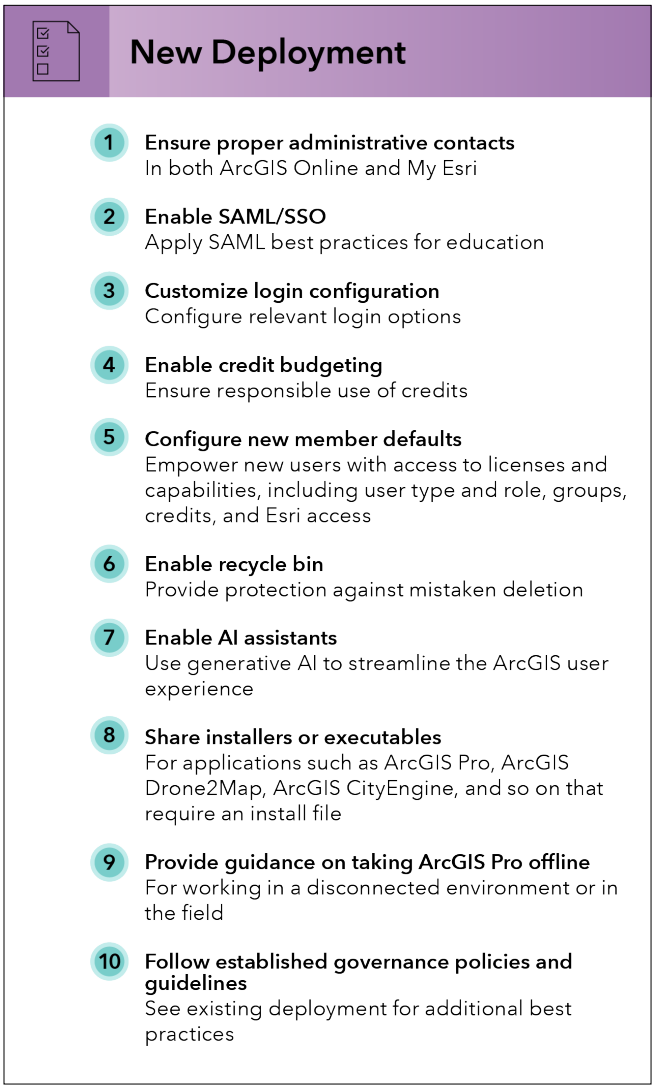
- New deployment
  - Ensure proper administrative contacts
  - Enable SAML or SSO
  - Configure new member defaults
  - Enable credit budgeting
  - Enable the recycling bin
  - Customize login configuration
  - Share installers and executables
  - Provide guidance on taking ArcGIS Pro offline
  - Follow established ArcGIS governance policies
- Existing deployment
  - Migrate existing ArcGIS accounts to SAML
  - Evaluate your existing system with reporting and health checking
  - Manage storage
  - Manage credits
  - Manage users

New deployment

This section is for administrators who are starting a new deployment of ArcGIS. If your institution already has an ArcGIS deployment, see the Existing deployment section for more information.

If you're new to ArcGIS, or deploying a subscription for the first time, reference the help documentation alongside this guide. The documentation provides detailed definitions and context for capabilities and actions such as configuring the website, managing members, managing content, and so on. In addition, explore My Esri, a self-service portal that allows you to manage your organization's information. You can learn more by taking the My Esri 101 web course.

Use the new deployment checklist below to ensure efficiency in deploying and operating a new ArcGIS Online subscription.



Complete the new deployment checklist

Complete the following steps when establishing a new deployment:

1. Identify an administrator and ensure proper administrative contacts in ArcGIS Online and My Esri.

First, identify a small group of people to take on the role of administrator.

Who should be an ArcGIS administrator, and what are the skill sets associated with this role? They should meet the following criteria:

- Have experience with managing software and accounts in a software as a service (SaaS) model
- Ideally, have experience with ArcGIS
- Understand institutional policies and guidelines for data governance (user and account information, data retention, security, communication, and so on)

Administrative contacts must be updated in both ArcGIS Online and My Esri. See the Technical Support resource page that outlines the differences between My Esri and ArcGIS Online.

The following best practices are recommended for ArcGIS Online administrators:

- Ensure you have more than one administrator to share responsibilities.
- Ensure that you have one account per administrator, not a single, shared account. This is important for accountability purposes.
- Ensure you have and use an ArcGIS account, not a SAML account, for administration. That way if there is an issue with SAML logins, an administrator can always still sign in directly through www.arcgis.com.
- Create and use separate accounts for administration work and day-to-day work. Administrators have broad access to organizational data and accounts and can accidentally overwrite or change data.

For additional information, refer to the "Know who holds the keys: Review your organization administrators" blog article.

The following best practices are recommended for My Esri administrators:

- Review permissions for team members who manage ArcGIS. Make sure permissions are set correctly and are current. Ensure the organization details, organization contact, and security contact are provided. As a best practice, use email aliases or other group identities for the organizational contact and security contact. That way, there is not a single point of failure.
- Set up authorized support callers. Given the authorized support callers are limited in number, it is important to prioritize granting this privilege to individuals who have the role of providing geospatial support on campus (such as a GIS help desk). If there are authorized support caller spots left, those can be shared with faculty and staff who use ArcGIS the most.
- Set up a cadence (quarterly, biannually, or annually) to audit the settings above and ensure that the right users still have the right access.

It is important to verify and update administrative contacts at least once per semester, or when an administrator's role at your university changes. If for any reason your administrator leaves or otherwise can't be reached and you do not have backups, it is difficult to regain administrative access to your ArcGIS organization. Refer to the Technical Support article "Write an ArcGIS Online Admin Change Letter of Authorization."

2. Enable SAML or SSO.

It is recommended that you manage ArcGIS Online accounts by using SAML logins or OpenID Connect logins, commonly referred to as single sign-on (SSO). SSO is a capability supported by many vendors to allow a user to access multiple systems with a single username and password, maintained by the institution. Students, faculty, and staff can use the same credentials coming from their institution's enterprise identity store to sign in to ArcGIS Online.

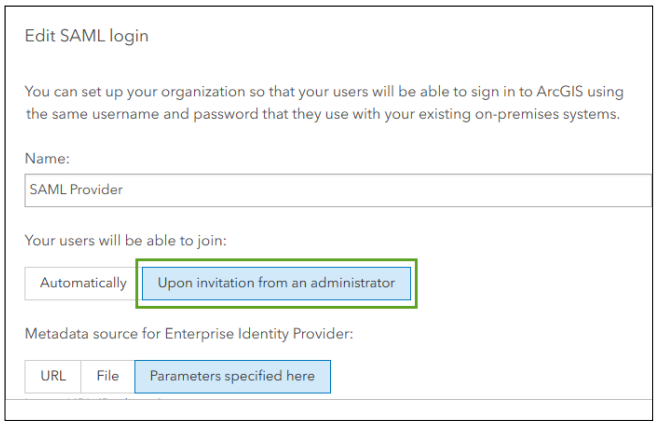
SSO provides the following capabilities:

- Ease of access for students, faculty, and staff—One set of credentials will be used, which allows users to remember passwords, save projects, and access geospatial portfolios without multiple logins.
- Simplified user management for administrators—No additional account logins need to be created for ArcGIS Online.
- Proper access permissions—When students, faculty, or staff are no longer affiliated with the university, access is prevented automatically. They will no longer be able to sign in to ArcGIS Online.
- Tracking ArcGIS Online usage—Monitoring usage is important for showing the value of ArcGIS. Once you are using institutional identities, you can integrate information from other sources, such as a user's degrees and programs.

For additional information, refer to the "Why Single Sign-On for academia (SAML logins)" blog article.

The following SAML practices are recommended:

- For academic ArcGIS Online organizations, allow the option to automatically join users to the organization, giving users immediate access the first time they sign in. Note, it is recommended that you scope access at the IdP (for example, app assignment and group membership) to restrict who can authenticate into ArcGIS Online.
- For administrative ArcGIS Online organizations, enable the option to manually invite users to join the organization (since there is a stricter limit of available accounts).



- Create a custom sign-in for your organization. See the Create a custom sign-in documentation.

3. Customize your login configuration.

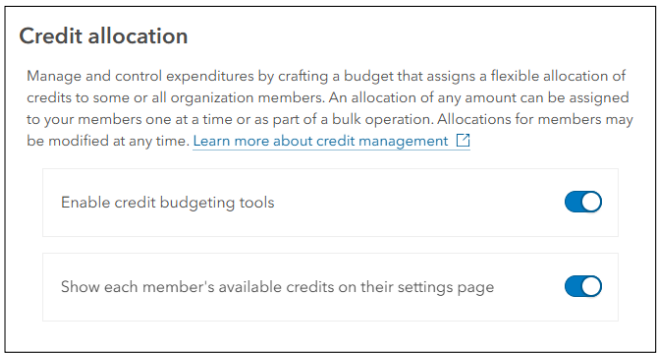
By default, ArcGIS desktop and mobile products are configured to point to the generic public ArcGIS Online address (www.arcgis.com). This means users must go through a multistep workflow to sign in to their ArcGIS Online organization; however, that can typically be alleviated by configuring your ArcGIS Online organization to only show relevant login options and allowing the apps to default to your organization.

- In ArcGIS Online, click **Organization** > **Settings** > **Security** > **Custom sign-in**. Configure it to display your SSO experience first and then the **Not a member...** route to the full, generic sign-in dialog box.
- In ArcGIS Pro, click **Settings** > **Licensing**, and set your Licensing portal to the URL for your ArcGIS Online organization.
- This will be done by the end user directly if they download the application from ArcGIS Online (the administrator cannot do this for everyone).
- If the ArcGIS Pro download is shared with an institutional file share, the installer could be customized by an administrator, and the end user will not have to make changes, which could save time and avoid support requests related to sign in.

4. Enable credit budgeting.

Enabling credit budgeting is the first step you must take to ensure responsible use of credits. Next, set credit allocation under **New Member Defaults**, so that all new members who join the organization do not exceed the allocated amount. They will not be able to run tools or processes that consume credits above this allocation.

See the Enable credit budgeting documentation to learn how to enable credit budgeting and set credit allocations. This is under **Settings** and **Credits**.



There are two main goals of credit budgeting:

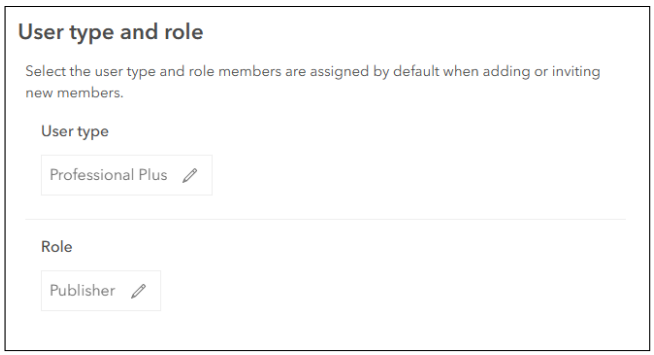
- Protect the organization from user mistakes—Issues such as infinite loops during programming or working with incorrect extents can cause unnecessary credit consumption. Setting a credit allocation will prevent such mistakes from exhausting the organization's credits.
- Promote reasonable use—Proactively direct users to better solutions instead of consuming credits beyond reasonable use. Credit budgets encourage students to find the right tool for the right job in the ArcGIS ecosystem. For additional information about various options, check the Credits section under Existing deployment below.

5. Configure new member defaults.

It is most efficient to instantly grant new users access to licenses and capabilities. Therefore, it is recommended that you configure new member defaults to assign capabilities and privileges automatically. This facilitates maximum access and minimizes inquiries to administrators, ultimately saving time and costs. Credit budgeting will determine the appropriate use of resources. New member defaults include user type and role, groups, credits, Esri access, and username format.

User type and role

For Academic Use (teaching and learning) ArcGIS Online subscriptions, enable the Professional Plus user type. For Administrative Use (operations, infrastructure, and facilities management) subscriptions, there are different options depending on your goal. Reach out to your account manager or highered@esri.com with any questions about Administrative Use deployments.

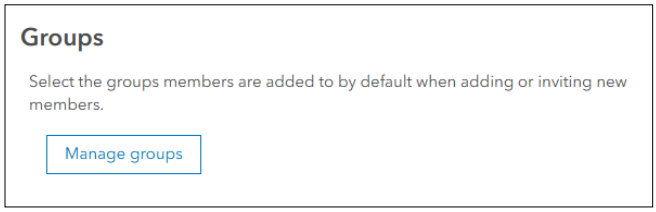


It is recommended that you create a custom role—for example, a new role called Publisher (New User) based on the built-in Publisher role—and add all relevant privileges. See the example in the image below. This allows users access to necessary capabilities while minimizing requests to administrators.



Groups

It is recommended that you create a group with curated content and add all new users to this group. It will help them get started with access to relevant content and information.



Credits

You previously enabled credit budgeting tools for the organization. Now, you'll apply credit budgets to users by setting the credit allocation. To do this, click **Settings** > **New Member Defaults** > **Credits**.

Note: The credit allocation limit does not apply to the user's storage consumption. Monitor and manage storage separately. Storage consumption is covered in the next section.

Determine credit allocation

Credit needs for users in higher education vary. Often, a small number of advanced users require high credit budgets to do large geocoding projects, detailed spatial analysis, and other credit-intensive work. In setting a credit budget that works for both these high-intensity users and more typical education users, consider the 80/20 rule. Find a credit budget amount that satisfies 80 percent of users while recognizing that there may be outliers that require special handling as usage occurs.

It's important to find this compromise for the following reasons:

- If the credit allocation is set too low, an excessive number of **Credit allocation exceeded** notifications could be received, and users may not be able to accomplish their work in a timely manner. They will have to ask for additional credits, and administrators will have to act upon the request.
- If the credit allocation is set too high, your organization may need to purchase additional credits, as the credits could be exhausted too quickly.

What is considered a reasonable credit budget varies. A large research university might allocate 2,000 credits per user. For a smaller institution where GIS is used primarily in teaching, 500 credits per user might make more sense. Setting a credit budget does not mean that everyone will consume their credit allocation limit. Most users in higher education organizations will not consume credits at all.

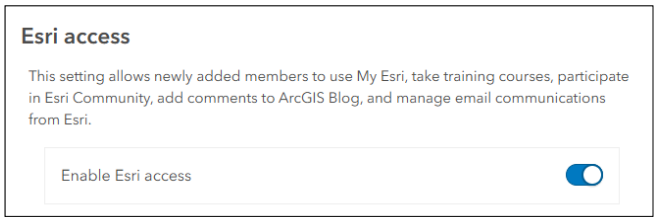
Therefore, setting a reasonable allocation to allow GIS users to do their work is advised, as well as regularly revisiting the amount to accommodate your organization's evolving patterns of use.

It is recommended that you regularly view the administrator dashboard to monitor the credit burn for your organization and use this information to make an informed decision about updating credit allocations. Also consider generating weekly, monthly, or quarterly reports on credit usage for tracking over time.

It is recommended that you reset users' credit allocation each semester to ensure members of your organization have an adequate amount of credits to do their work. It can help reduce inquiries to administrators for additional credits. This can be done manually or automatically with a script.

Esri access
Allow users to learn independently and help themselves by providing access to Esri resources and interactions. Enabling this option allows users to do the following:

- Access Esri Training
- Participate in Esri Community
- Comment on ArcGIS Blog articles
- Manage Esri emails
- Access My Esri



Username format
The default format is recommended. This will use the organization's short name, which was set when the ArcGIS Online organization was created.

6. Enable the recycle bin.

Enable the recycle bin for your organization to provide protection against mistaken deletion. The recycle bin retains deleted content for 14 days. There is no backup functionality in ArcGIS Online.

1. Sign in to your ArcGIS organization as an administrator.
2. Click **Organization** > **Settings** > **Items**.
3. In the **Recycle bin** section, click **Opt in to the recycle bin** and click **Close** to dismiss the recycling details.

For additional information, refer to the "Recycle Bin—What you need to know" blog article.

7. Enable AI assistants.

Generative AI assistants can streamline the ArcGIS user experience. AI assistants can help create content, search and summarize data, provide suggestions and recommendations, and write code. There are different AI assistants available for various applications. To enable AI assistants, click **Organization** > **Settings** > **AI Assistants** and turn on the **Allow use of AI assistants by members of your organization** toggle button.

For additional information, refer to Configure AI assistants.

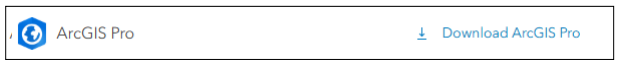
For additional information and to verify compliance with specific AI policies at your institution, check ArcGIS Trust Center and Trusted AI.

8. Share installers and executables.

When users get started with ArcGIS, they will first sign in to ArcGIS Online to gain access to the many apps that are available. In certain instances, they will use applications such as ArcGIS Pro, ArcGIS Drone2Map, and ArcGIS CityEngine that require an install file.

Access to install files for ArcGIS Pro can be provisioned directly through your organization, providing a self-service approach to eliminate barriers to access for users and allow scalability, while minimizing requests to administrators.

- For ArcGIS Pro, instruct users to download the latest version from ArcGIS Online in Settings. See Download ArcGIS Pro from ArcGIS Online in the documentation.



- For all other ArcGIS products, including older versions of ArcGIS Pro, use the institutional delivery method or file share of preference for your institution, such as OneDrive, Box, and so on. Do the following:
  - Ensure you provide institution-specific instructions for users.
  - Ensure files are accessible only to authorized users (not shared publicly).
  - Provide access to multiple versions.
  - Deliver custom installers that point to your ArcGIS Online organization (rather than www.arcgis.com).

Note: It is not recommended to use My Esri for all your users, as this requires manual management and scales poorly as the number of users across your institution increases.

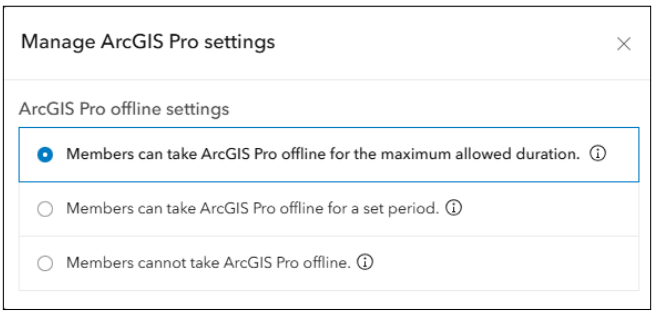
For additional information, refer to the "Best way to share ArcGIS executables and license files" blog article.

9. Provide guidance on using ArcGIS Pro in a disconnected environment.

If students, faculty, and staff need to work in a disconnected environment (such as fieldwork without internet connectivity or in secure enclaves), the options depend on their use case:

- For users who are disconnected intermittently (such as during fieldwork), taking an ArcGIS Pro license offline is recommended.
- For users in a secure enclave (air-gapped, no connectivity), a stand-alone ArcGIS Pro license is recommended.

It is recommended that you enable offline licensing of ArcGIS Pro as an organization-wide setting (click **Licenses** > **Add-on Licenses**). There are options available for maximum allowed duration (end of license term) or for a specified period of time.



If a user checks out a license beyond the institution's license renewal end date (the renewal date can be found on the ArcGIS Online overview page), the license will stop working. In such instances, the user and administrator must plan ahead for the license to be refreshed and checked out again for the new term. If that is not possible, an early renewal can be initiated, or the license term can be changed permanently so that typical fieldwork time frames are not impacted. Contact your account manager or highered@esri.com for assistance.

If users are working in an air-gapped or black-box environment without internet access, a stand-alone ArcGIS Pro license is available, if needed (free for the first year). Contact your account manager or highered@esri.com for assistance.

Note: You may need to recover a lost Named User license if a user's computer is reimaged without the user first returning their license, if the user took their license offline in a virtual environment without returning it, or if the user's computer is lost or stolen. Contact Esri Technical Support to reset lost Named User licenses.

For additional information, refer to the "Taking ArcGIS Pro Offline" blog article.

10. Follow established ArcGIS governance policies and guidelines.

While at this stage in your new deployment, you do not have accumulated content and user accounts, so it is important to ensure policies are in place and will be followed as usage of ArcGIS evolves.

See the Existing deployment section for information about evaluating, reporting and health checking your system, as well as options and solutions for managing content or storage, credits, users, and ongoing communication.

Existing deployment

This section is for administrators who are managing an existing deployment of ArcGIS that already has users and content and for which governance practices need to be implemented or revised. This section covers the following topics:

- Migrate existing ArcGIS accounts to SAML accounts
- Evaluate your existing system with reporting and health checking
- Manage storage
- Reduce credit usage
- Manage users

Note: It is recommended that administrators of existing deployments review the new deployment checklist to verify if their existing system can be enhanced.

Apply policies and implement management solutions for GIS content, credits, and users

As ArcGIS Online usage grows across educational institutions, higher education customers should think about managing the amount of content and storage, depending on their institutional needs and policies, as well as Esri license allocations. As discussed earlier, governance is instrumental in setting institution-wide standards and policies that apply to how users and content are gathered, stored, accessed, processed, and disposed of.

In addition, it is important to establish processes and procedures for monitoring this usage. There are multiple reasons for doing so, including the following:

- Illustrating the impact of GIS on the university's educational and research mission
- Communicating the growing breadth and depth of GIS use to university stakeholders responsible for funding
- Maintaining and supporting institutional systems like ArcGIS
- Ensuring adherence to governance policies
- Planning for future needs
- Preventing potential storage shortages or other related issues down the road

In addition to monitoring ArcGIS use, it is important to have procedures in place for health checking your ArcGIS Online organization to support expansion or contraction planning—such as adding or removing storage, users, credits, and so on—to ensure sustainable use. The notion of health checking, which is periodically reviewing a checklist of items as described below, is important to ensure optimal performance and uninterrupted service.

Complete the existing deployment checklist

Complete the following steps when evaluating an existing deployment:

1. Optionally, migrate existing ArcGIS accounts to SAML accounts.

If you just enabled SAML and have been using ArcGIS already, you will have existing ArcGIS accounts. While administrators can choose to let both ArcGIS and SAML logins exist, taking proactive steps to migrate minimizes the confusion of having two accounts and provides an opportunity to delete older or unused content and groups.

If you choose to transition from ArcGIS accounts to SAML accounts, consider the following recommendations:

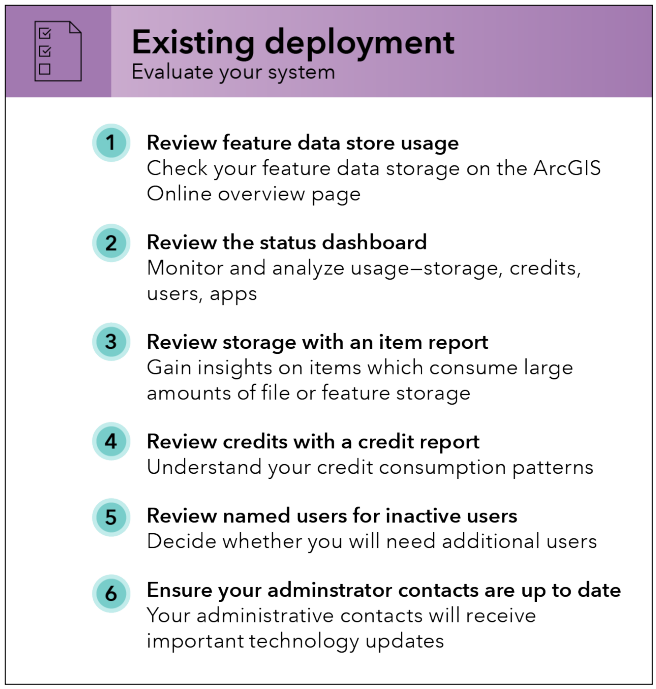
- Communicate required changes and advise users of steps they must take to change ownership of their content and groups.
- Provide a well-advertised cutoff deadline. Consider implementing a grace period, such as disabling accounts and unsharing content, before finally deleting.
- Ensure you provide support to users as an administrator, and provide information on who to contact, where to go for help, and so on.
- For additional information, refer to "Set up SAML logins."

2. Evaluate your existing system with reporting and health checking.

Before governance policies and solutions are implemented, you must evaluate your existing ArcGIS system.

There are various reports and health checks that can be performed to understand the state of your system and evaluate it against your governance policies to take next steps and implement solutions. Therefore, periodic checking of your ArcGIS Online organization is recommended to ensure optimal use of the system.

It is recommended to do this once per semester or at least once per year.



1. Review feature data store usage
By default, an ArcGIS Online subscription comes with Standard Feature Data Store, which includes 500 GB of feature data storage and supports the full range of hosted feature layer operations. This quota includes feature storage only and does not include file or imagery storage. The feature data store also determines the computational resources available to your organization.

Administrators must maintain their feature data store threshold below this 500 GB limit to ensure availability for users as well as optimal performance.

On average, for higher education ArcGIS Online organizations, 85 percent of credit use is consumed by feature storage. The costs associated with monthly or yearly feature storage—if one consumes the entire 500 GB of storage—are 120,000 credits per month and 1,440,000 credits per year.

Reducing the amount of content can decrease credit costs, or increasing storage capacity can ensure the organization maintains computational resources and that credit consumption is within the Education Institution Agreement credit allocation. Monitoring storage and resource usage allows you to anticipate the need to upgrade or take other actions to sustain a reasonable user experience.

To learn more about recording usage from the status dashboard, see the View status dashboard documentation.

2. Review the status dashboard
One way to understand and monitor how ArcGIS Online is used is to glean information from the status dashboard. It provides administrators with tools to monitor and analyze various aspects of their organization's usage, such as tracking feature data store use, credit consumption, app use, member activities, and so on. See View status dashboard documentation.

The dashboard provides detailed information about credit consumption. You can see overall metrics about the organization, or you can go deeper into this data from either an item or individual user perspective. For example, if you notice credit consumption from an analysis spike suddenly in the organization, you can use the dashboard to pinpoint which user or users are responsible for this spike as well as what kind of analysis or workflow they were running. This allows you to do quick checks or on-the-spot monitoring. For more in-depth capabilities or batch monitoring, reporting may be more suitable.

3. Review storage with an item report
In ArcGIS Online, you can click **Organization** > **Status page** > **Reports** to create reports, specifically an item report. To identify items in the organization that consume large amounts of feature storage, download the report, open it in your preferred spreadsheet software, and sort the respective fields.

For further information, check the View status dashboard documentation and the "Tracking Your ArcGIS Online Feature Data Store Key Health Indicators" and "Supercharge your ArcGIS organization management with reports" articles. You can also schedule the report to run automatically every week or month for future recordkeeping and predictions.

Once you have an idea of your items or content, you can choose a solution that works for you or a combination of them to help comply with your existing policies. Even if you're not close to reaching the 500 GB limit, you can review the solutions below to understand your options for scaling the organization if it becomes necessary.

4. Review credits with a credit report
What does credit usage look like at your institution? How do you determine what most users spend credits on so they can be helped and supported?

It is recommended that you monitor credit usage weekly or monthly. For a quick view, check the dashboards in ArcGIS Online to see credit usage over time and by type. For ongoing monitoring, check the Reports section in ArcGIS Online and use the following steps:

1. Generate a credit report.
2. Schedule reports to capture data going forward. Schedule the report to run automatically every week or month.
3. Manually run reports to capture past data and predict future consumption.
    a. Download the report .csv file.
    b. Open in spreadsheet software such as Microsoft Excel.
    c. Filter, sort, and summarize to explore your credit usage.

For additional credit budgeting strategies, see "Managing credits in ArcGIS Online" on the ArcGIS Blog.

Once you have an idea of your organization's credit consumption, you can choose a solution that works for you or a combination of solutions to help comply with your existing policies.

5. Review named users for inactive users
Education customers must proactively manage their quota of named users. With the cyclical nature of incoming and graduating students and the finite number of Named User licenses, it is important to think about governance standards related to named users, including offboarding of graduating students.

For a quick view of your members, use the Status dashboard.

For ongoing monitoring, click **Organization** > **Status** > **Reports** and do the following:

1. Click **Create report** > **Report schedule** > **Member report** and choose the time period, including daily, weekly, monthly, or quarterly. Schedule reports to capture data going forward.
2. Manually run reports to capture past data (ArcGIS only retains one year of history).
3. Download the report (.csv file).
4. Open in spreadsheet software such as Microsoft Excel.
5. Filter, sort, or summarize to explore your users' usage.
6. Explore data in conjunction with other reports (Item, Activity, Credit, and so on).

Identify whether users are authorized

For institutions with an Education Institution Agreement, the license is meant to serve the entire campus community. Therefore, the potential user base includes your entire institution. In reality, not all students, faculty, and staff will use ArcGIS.

Identifying whether users are authorized should be done once a semester. This task requires collaborating with the IT team that maintains the system of record or identity provider at your institution. If you have implemented SAML accounts, or ArcGIS accounts in ArcGIS Online, you can use that list to compare the status of users to the system of record to determine which students are or are not authorized. In the case of ArcGIS accounts, depending on how your institutional systems are set up, you may need to both collaborate with your IT team and check students' status with the registrar's office and faculty or staff status with the human resources office.

As an ArcGIS Online administrator, you must share a list of ArcGIS Online accounts with your IT colleagues and receive from them a list of authorized and unauthorized users. With this information, you can assess the true usage statistics of ArcGIS Online (as part of a monitoring practice), and you can delete users who are no longer authorized.

6. Ensure your administrator contacts are up to date
It is important to verify and update administrative contacts at least once per semester, or when an administrator's role at your university changes. Refer to "Know who holds the keys: Review your organization administrators" blog article.

Ensure you have more than one administrator

It is important to have more than one administrator assigned to each subscription. ArcGIS Online security has been increased to meet FedRAMP certifications, and as a result, Esri can no longer easily add new administrators on behalf of an institution. For example, if your administrator leaves and if you do not have a backup, you must follow a formal process to add an administrator. This process will include a letter with an executive signature approving the change. This process could take time and resources to complete, resulting in a significant delay in service interruption.

Refer to the "Write an ArcGIS Online Admin Change Letter of Authorization" article for steps to follow if your administrator leaves and you have no way to get in touch with them.

Review My Esri permissions for team members who manage ArcGIS

Review your My Esri contacts for proper permissions. Make sure permissions are set correctly and are current. Then, verify that your authorized support callers are still accurate.

3. Manage storage.

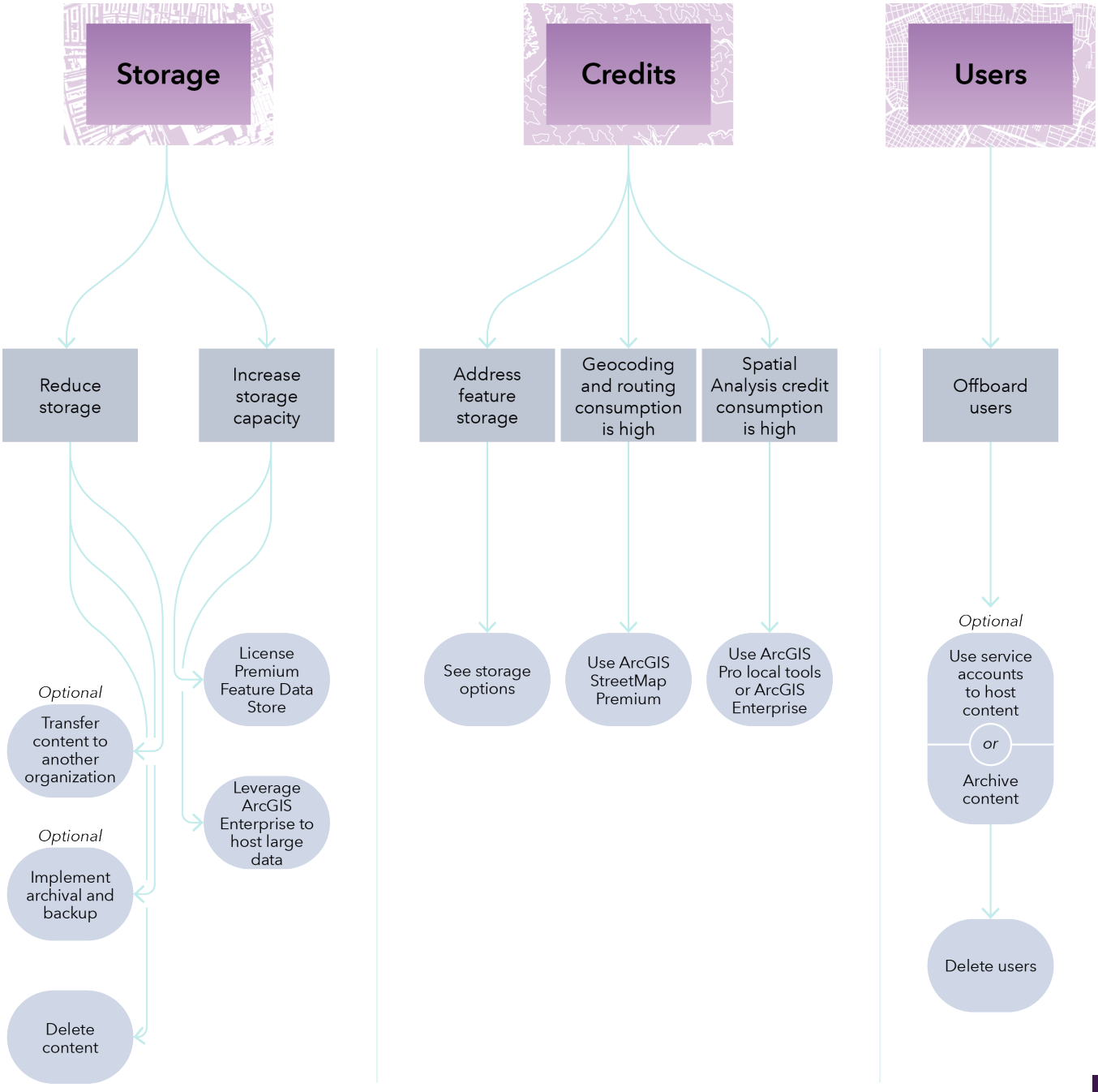
In this section, you will review and selectively identify solutions that will comply with the governance policies and guidelines you created in the previous module. Once you have an idea of your institution's needs for content, storage, and credits, determine if your needs can be met with your current license allocations or if action will be needed either to reduce storage needs or increase storage capacity.

The approach you take to storage and content retention must be tied to the governance policies that you put in place.

Reduce storage

After running an item report, consider removing any large items that are not being accessed or are redundant. This includes content that is no longer needed, content that can be stored in other systems equally or more efficiently, content that is redundant (for example, copies of data), or content that violates your governance principles.

Students inevitably leave the institution and become inactive users with inactive content. In addition, redundant data can result from course activities in which dozens of students follow the same workflow.



Removing content from ArcGIS Online isn't always a question of deleting content. In some cases, it's a question of archiving, transferring, or identifying alternative storage for content.

Important: Before deletion, transfer, archiving, or backup takes place, it is important to communicate with potentially affected users. Verify with item owners whether the items are still needed. If the items are still used, alternative options for hosting this content should be discussed. A suggested workflow, if applicable, could be a practice of unsharing items for a grace period, and then deleting them (if no inquiries are made about the missing data). Archiving content is an option as well to ensure data is not lost, if needed. Factor the purpose of this content into your decision. For example, research data should be treated with more caution than a student's class exercises.

Communication options and considerations are covered in the next section.

Export content from the system before deleting

One strategy for reducing space in an ArcGIS Online organization could be exporting content to another format or to another ArcGIS Online organization and then deleting the content once it has been exported.

- Ensure you have the right data in the right place—It is recommended that higher education customers verify whether certain content belongs to the academic ArcGIS Online organization. At times, academic ArcGIS Online organizations host content that should be hosted in administrative or operational ArcGIS Online organizations. Other times, content that should be widely available to the public should be hosted by outside entities, such as state data repositories.
- Transfer content during the offboarding process—In some cases, departing users should transfer content to another location for permanent storage after they no longer are part of the educational institution. For example, as students graduate, they might want to transfer GIS portfolios and capstone or thesis work to an ArcGIS for Personal Use organization.

There are several options for transferring content, listed below. Guidance on choosing the appropriate method can be found on the Esri Community blog.

- ArcGIS Assistant—Not supported by Esri Technical Support. Use at your own discretion.
- GEO Jobe—Administration tools for ArcGIS Online or for ArcGIS Pro.
- ArcGIS API for Python clone items method—Recommended, but requires scripting.
- Migrate Content for ArcGIS Enterprise/ArcGIS Online—Additional resource.

Implement archiving and backups

It is recommended that you archive important ArcGIS Online content to an external destination. Archiving is the process of storing data for future reference, which is often a practice for other data management systems. Archiving could reduce storage if the original content is removed from ArcGIS Online and archived in a separate system.

As an institution's administrator, you'll need to decide what should be archived and which archival option would work for you. Consider items that need to be immediately accessible (which would stay in the ArcGIS Online organization) versus items that only need to be accessible once in a while (that could be archived). Take into account any existing policies about data retention that you created.

For example, you can do one or more of the following options:

- Archive hosted feature layers to cloud storage as file geodatabases.
- Archive ArcGIS StoryMaps stories as JSON files.
- Use GEO Jobe Backup My Org.
- Use ArcGIS Enterprise as an archival solution.
- Use the ArcGIS Online notebook Demo Backup to Dropbox.
  - After opening the link, sign in to your ArcGIS Online organization.
  - This method requires developer access to Dropbox, usually included with education institution licensing.
  - Read "Introducing the ArcGIS Well-Architected Framework" for additional considerations.

You may also want to consider backing up important content for the purpose of disaster recovery. Backup is a process of duplicating data that can be retrieved in the event of data loss. An organization could consider layers of importance to be backed up. Backups do not reduce storage, though backup is a recommended practice for critical content (such as important research projects, publications, and so on). Similar example options as above would apply. You can use third-party tools, such as GEO Jobe Backup My Org, or Esri Professional Services can provide recommendations. If interested, contact your account manager or highered@esri.com.

Delete content

After you've exported, backed up, and archived your content, and communicated with your users, you can delete content in accordance with the governance policy that you set for your institution. Once a process is in place, there should not be much to remove, other than ongoing maintenance and implementation of your policy.

If you are deleting users and content simultaneously, keep the following in mind:

- If you are deleting a single member who owns content and groups, you must first transfer their content and groups to a different member or delete their content and groups.
- If you are bulk deleting members, you can either transfer or delete their content. You cannot transfer groups when bulk deleting members; their groups will be deleted.

Increase storage capacity or implement alternative options to ArcGIS Online

Buy additional credits

There are two feature data store types:

- Standard Feature Data Store (default with the Education Institution Agreement)—Feature storage typically consumes a significant number of your agreement's credits, so it is the most important type of storage to manage.
- Premium Feature Data Store (additional cost)—Feature storage does not consume credits. However, you must manage your feature storage to remain within the quota defined for your Premium Feature Data Store level.

You can purchase additional credits to cover credit consumption beyond your Standard Feature Data Store license allocation.

Upgrade to Premium Feature Data Store

For organizations reaching the 500 GB Standard Feature Data Store storage limit, and for which reducing feature storage usage is not a viable option, consider upgrading to Premium Feature Data Store. In addition to providing additional storage, Premium Feature Data Store provides additional dedicated database resources such as memory, CPU, and input and output (I/O) and could improve your organization's overall performance.

If you don't renew your subscription, Premium Feature Data Store will automatically revert to Standard Feature Data Store, and the storage credit model will resume, provided your subscription has less than 500 GB of storage in use.

Premium Feature Data Store does still require credits for the following:

- Credit-based transactions (for example, routing, geocoding, and spatial analysis) still consume credits when used.
- Non-feature storage (files and attachments outside Premium Feature Data Store) still uses credits.

Note: Purchasing Premium Feature Data Store is more cost-effective than buying additional credits to cover storage costs.

Use ArcGIS Enterprise to host large datasets

ArcGIS Enterprise runs on infrastructure your institution provides. It allows you to control your deployment. It can be run on Microsoft Windows, Linux, and Kubernetes, and it supports small single-machine deployments as well as large multimachine deployments in the following situations:

- Public cloud infrastructure
- Private cloud infrastructure
- On-premises infrastructure using physical or virtualized hardware

It works similarly to ArcGIS Online but provides many additional capabilities.

While licensing for ArcGIS Enterprise is included as part of the Education Institution Agreement, there is an additional cost associated with using your own infrastructure or servers (on-premises or cloud), as well as administrative costs associated with setting up and maintaining it.

Moving content from ArcGIS Online to ArcGIS Enterprise will require effort to update links and apps that depend on the migrated data.

ArcGIS Enterprise can also be used for storage or archival purposes, or for storing restricted information (health or privacy-protected information).

Consider the following options for purchasing Premium Feature Data Store or using ArcGIS Enterprise:

1. Upgrade ArcGIS Online to Premium Feature Data Store that covers an institution's projected feature storage needs for the year. M4 Premium Feature Data Store is the largest, which provides 4 TB of feature data storage.
2. Upgrade ArcGIS Online to a smaller Premium Feature Data Store level (M2 or M3 Premium Feature Data Store) and move big projects to an institutionally supported ArcGIS Enterprise setup.
3. Keep ArcGIS Online with Standard Feature Data Store and move big projects to an institutionally supported ArcGIS Enterprise setup.

Options 2 and 3 are hybrid approaches, in which an institution would choose to host big feature storage items on ArcGIS Enterprise to help manage costs, and the rest of the feature storage needs could be handled by one of the Premium Feature Data Store options or Standard Feature Data Store—depending on projected storage needs.

Your organization must consider which storage solution provides the best ROI in your specific context. With Premium Feature Data Store, Esri provides the infrastructure and management at a cost, while with ArcGIS Enterprise, the technology itself is available with your existing Esri license agreement, but there is an associated cost with setting up, operating, and maintaining your own infrastructure (on-premises or cloud) for ArcGIS Enterprise.

The advantage of storing items with ArcGIS Enterprise is that you use local resources and do not consume cloud storage resources.

A disadvantage could be that now there are two separate portals and publishers must be aware of and share content to the correct portal. However, if the system is properly designed, it will appear seamless to end users of the content. Since they are consuming the content, they will not be concerned with what portal it's being hosted on.

Note: Cost comparisons of Premium Feature Data Store versus ArcGIS Enterprise depend on your institution's needs, policies, and practices. Esri Professional Services can compare staffing, support, hardware, the software to run ArcGIS Enterprise, and the cost of purchasing Premium Feature Data Store. Esri Professional Services can provide recommendations on specifications for hardware depending on your requirements or systems, the cost of doing installations, and so on. If interested, contact your account manager or highered@esri.com.

Depending on this assessment of your ArcGIS Enterprise deployment (including the costs of servers, ongoing maintenance, staff, and so on), purchasing Premium Feature Data Store could be the more affordable option. For those who aren't already running ArcGIS Enterprise, Premium Feature Data Store is the recommended option.

Regardless of approach, it is crucial that enough lead time is provided to allow for conversations and proper scoping of requirements. You must schedule, plan, hold, and follow up on conversations with other business units and divisions within the university (IT, budgeting, and so on). Share the following resources with IT colleagues who are knowledgeable in supporting similar requirements for other systems:

- Introducing the ArcGIS Well-Architected Framework
- ArcGIS Architecture Center

Monitor performance of a feature data store

In addition to monitoring the storage consumption of your organization's feature data store, it is also important to monitor the performance of its processing power. The feature data store's compute resources (for example, CPU, I/O, and memory) power its database engine to support your queries; edits; analysis; extract, transform, and load (ETL); and so on. Sustained periods of peak use result in poor user experience, with requests timing out or tasks failing to complete.

As your user base grows, you are likely to require more and more feature data store compute resources to sustain your organization's workload. By monitoring usage, you can predict when you need to consider upgrading to a more powerful feature data store.

Each step-up in feature data store levels, from Standard to Premium M2 to Premium M3 and so on, delivers additional compute resources.

ArcGIS Online administrators can monitor the resource usage of their organization's feature data store by clicking **Organization** > **Overview** and clicking the **Feature Data Store** link. The resource usage graph at the bottom of the dialog box shows the use over the last hour, 24 hours, or week.

The data in the resource usage chart can also be accessed programmatically with ArcGIS API for Python. This allows you to capture a historical record of your organization's feature data store compute performance over time, longer than the one-week rolling window available with the chart.

The historical resource usage record shows periods of sustained maximum usage (100 percent over several minutes or more). These reflect intervals when users are asking more of the system than can be delivered. Users will notice the system has slowed; or for prolonged periods of sustained load, users may experience unexpected time-outs or failures.

For additional feature data store processing power and compute resources, see "Tracking Your ArcGIS Online Feature Data Store Key Health Indicators."

4. Reduce credit usage.

If you predict your institution's credit consumption will exceed what is included in your licensing agreement, you can use various alternatives that provide on-premises support and resources for computationally intensive needs. These options will have an associated cost (buying additional storage, credits, or products).

Use Geocoding and Routing Solutions—ArcGIS StreetMap Premium

Use the ArcGIS Geocoding service or views of this locator for batch geocoding in ArcGIS. Routing and Network Analysis services also consume credits. However, credit estimation is available at the top of the tools before running the geocoding, routing, or network analysis job. Therefore, encourage your users to estimate the number of credits they will use and have a discussion of what makes sense.

A common approach to reducing geocoding or routing credit consumption is to obtain ArcGIS StreetMap Premium, which supports institutional delivery of such services, rather than using ArcGIS Online resources. It is a subscription product renewed yearly, and it is available at a cost.

Your organization must determine what geocoding should be done in ArcGIS Online or offloaded to an alternative solution. Consider your institution's needs, such as whether bulk geocoding is needed for research projects (100,000 addresses or more) or course projects (dozens or a few hundred addresses). Also, consideration should be given to data sensitivity. For example, if you work with health-care patient data and security is a concern, ArcGIS StreetMap Premium would be required regardless of the number of records. Once an institution has purchased ArcGIS StreetMap Premium, it can be used by others in the campus community, so that could be an advantage.

In addition, there are several types of education licenses, which provide different credit allocations. Use your best judgment in terms of credits available to you in ArcGIS Online (including projecting for future use, which is why understanding your patterns of credit use, as outlined previously, will be important), before considering ArcGIS StreetMap Premium as a more cost-effective solution.

Work with your account manager or email highered@esri.com for additional information on obtaining ArcGIS StreetMap Premium.

Use Spatial Analysis tools in ArcGIS Pro

Running any of the spatial analysis tools in ArcGIS Online consumes credits, though those tools only consume approximately 0.5 percent of overall credits in higher education use cases. Use the credit estimator in ArcGIS Online Map Viewer to calculate the expected credits for a transaction.

As an alternative, consider running the tools locally in ArcGIS Pro. ArcGIS Pro offers a more comprehensive suite of tools, especially for more advanced workflows.

You can also use ArcGIS Enterprise for analysis-heavy tasks.

5. Manage users.

Your practices for deleting or offboarding users must follow the governance policies that you have put in place.

Delete or offboard users

Deleting users cannot be reversed. Before deleting users, decide the right time to delete users in your institution's academic year, what constitutes old content, and what to do with the users' content and groups, as defined by your governance policies.

There are several approaches you can take to delete users, which must be used in conjunction with your policies:

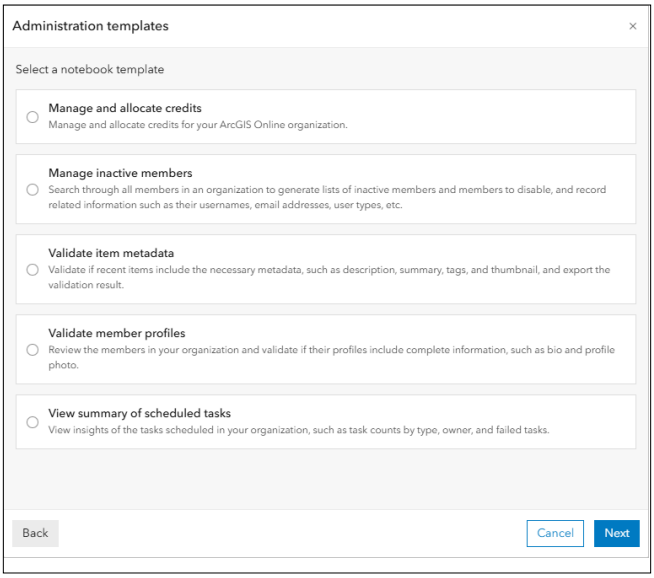
- Using the ArcGIS Online tools (GUI) is recommended for working with one account at a time. As a result, it does not scale and typically results in haphazard enforcement of retention guidelines and policies. See the Delete members documentation for ArcGIS Online.
- GEO Jobe administration tools for ArcGIS include tools for the bulk deletion of users.

- Scripting, shown in the following scriptable workflow, could be run annually at the start or end of the academic year:

1. Identify users who have not signed in recently.
2. Use a cutoff or a specific period of time (as defined by your institutional policy).
3. Delete any of their content that is not shared.
4. Verify that no one has accessed it for the determined period of time and that it is safe to delete.
5. View groups owned by users and delete groups that have no content.
6. Unshare the users' remaining shared content and capture the sharing settings in a tag.

   This provides a grace period (for example, one year); and this content will be deleted in step 2 upon the next iteration of the process.
7. If the user does not own groups or content, delete the user.

To get started, you can use notebook templates for administrative tasks in ArcGIS Online. To access these, click **Notebooks** > **New Notebooks** > **Template Notebooks** > **Administration**.



You can also use service accounts or allow alumni access.

Use service accounts

To delete a user without deleting their content, you can transfer the content to another user.

Service accounts can be used to store content from multiple users. Typically, this content is still being used. For example, a faculty member developed course materials and labs in ArcGIS that are used across the department but later leaves the institution. These materials need to be retained, so they are moved to a service account. This is a single account that can continue to host the content while allowing you to delete the original user who created the content. ArcGIS Online is a SaaS system, and accounts must be tied to individuals—except for service accounts. Passwords for service accounts should be stored in a password manager and maintained by IT managers.

Service accounts can be used if the individuals managing them (typically ArcGIS administrators) have their own Named User accounts. The service account should not be their only account.

Alumni access

According to the Esri Education Institution Agreement, authorized users include registered students, educators, and staff members of the institution. For certain institutions, registered students could also encompass alumni.

The intent of the Education Institution Agreement is to provide access to current students, not alumni, but it allows the institution to set policies and practices regarding authorized users. For example, some institutions may choose to provide temporary access to alumni, such as while recent graduates are actively job-hunting and need to share their GIS portfolio from their time as a student.

The recommendations in this chapter can help you understand when you need to act and how to plan proactively for future years. Being a good steward of resources and operating within the bounds of existing allocations—storage, credits, users, and performance—is important for future management of ArcGIS resources.

Given the policies you defined earlier, various solutions can be implemented to comply with those policies.

Chapter 4

Engagement



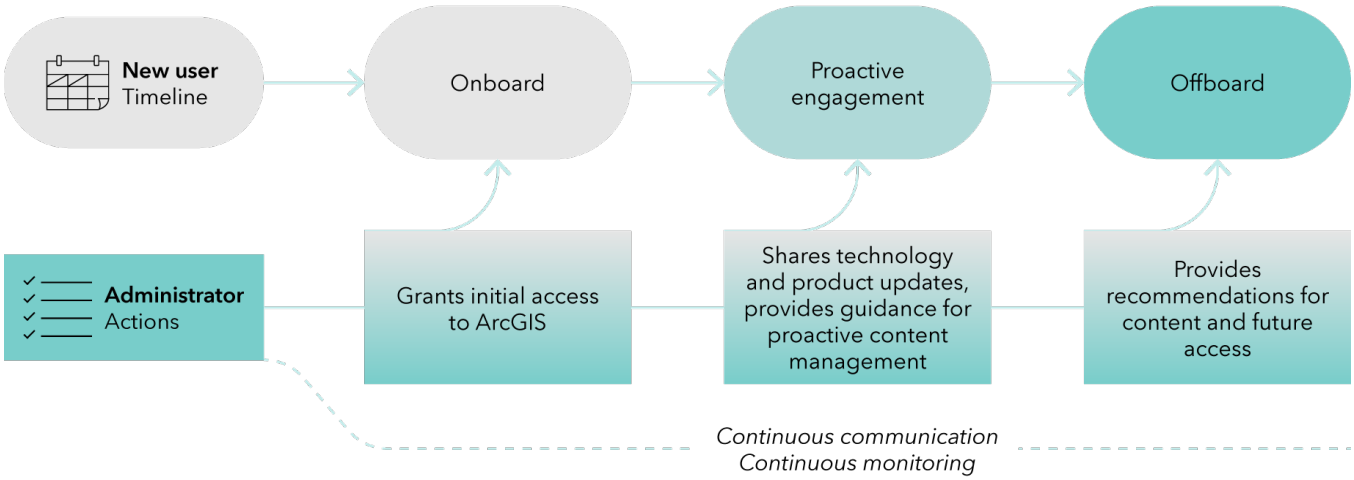
This chapter outlines steps and recommendations associated with providing continuous support and communication to GIS users across the organization. Some of this communication relates to how and where users get help as they join the institution. Some of the communication is directed to users during their tenure at the institution. And finally, as users leave (for example, as students graduate and faculty or staff retire or depart the institution), it is important to provide information on various options regarding content and future access.

Throughout, continuous monitoring is integral to the governance process and serves multiple goals, such as understanding your system, raising awareness about how GIS is used, and promoting the value of geospatial technology.

Communication and monitoring practices should follow your institution's governance standards established in chapter 2.

IN THIS CHAPTER:

- Communication goals
- ArcGIS access and support
- Communication approaches
- Onboarding
- Ongoing active communication
- Offboarding
- Continuous monitoring and organizational transparency



Communication goals

Clear guidelines and appropriate messaging must be communicated to incoming, active, and graduating or departing students, faculty, and staff. One goal is to proactively inform users of their responsibilities by posting guidelines and policies publicly. Another goal is to allow users within your organization to be self-sufficient. Tell users how to access ArcGIS and provide them with resources to learn skills and solve problems themselves. Advise them on how to archive or dispose of unneeded content and groups. Explain their options for transferring content before leaving and what happens to their content after they leave.

All communication must comply with the institutional policies and guidelines you set.

ArcGIS access and support

Before onboarding users and communicating instructions to them, first create an ArcGIS access website. This website will provide information on how to access GIS technology, learn through training resources, and find help and technical support.

Create an ArcGIS access website

Having an internal website to explain how to access ArcGIS and get support saves time and effort for users, stakeholders, and ArcGIS administrators. The purpose of this website is to provide a one-stop shop for GIS information.

Seek to answer the following questions with your website content:

- What GIS technologies are available and to whom?
- How can a user learn more about GIS?
- How can a user get GIS support?

The website should include the following, at minimum:

- Institutional guidelines and policies related to ArcGIS
  - User responsibilities
  - Data retention
  - Proactive content management
- A single point of contact for assistance, an outline of what kind of support and training are provided, and where to go for help
  - Email address
  - Support options
  - Training options
- How to get started with technology and a list of available software, along with next steps for how to access it
  - For ArcGIS Online, link users directly to your institution's ArcGIS Online organization.
  - For ArcGIS Pro, provide instructions on how to download and install the application.

Provide support for ArcGIS

Having an ArcGIS access website is the starting point for supporting users, but you must also provide support options to offer additional advice and answer questions they may have that are not covered by your website.

Provide internal support to GIS users

There are various organizational structures—including centralized and distributed models—that can be successful. The following are examples of how support is provided and funded:

- An IT team with a part-time or dedicated role for GIS support
- Libraries or GIS centers with a part-time or dedicated role for GIS support
- Consulting services with a part-time or dedicated role for GIS support
- Experienced GIS users across several departments

Regardless of organizational structure, ensure GIS support aligns with existing approaches at your institution. Where do users go for help with other institution-wide software offerings? Keep the following general principles in mind:

- Provide a single point of contact for users to find the support they need. If user requests need to be assigned to another support team, the point of contact can help the user find the next steps and appropriate resources.
- Specify options and pathways to get help. Depending on your institutional standards, you may provide an email address, a web form, a ticket system, a phone number, a Slack channel, or another contact method.

Set clear expectations and boundaries with your users, including the support staff's typical response time and institutional policies about support inquiries.

Use Esri Support for GIS inquiries

If your GIS support staff cannot support inquiries, Esri Support is an option. As part of your Education Institution Agreement, or a Departmental Agreement, you can designate Esri authorized support callers who are on your GIS support staff or are consistent and experienced ArcGIS users. The number of authorized support callers varies depending on the type of agreement.

Set expectations and boundaries with your users, such as the following:

- Prepare by gathering information to include when placing an Esri Support ticket (such as the operating system, software, and description of the issue) and tell users how this information is collected.
- Communicate the response time for an Esri Support ticket.

As an authorized support caller, you can elevate the user to be the main contact for a technical support case. You can still monitor cases and their solutions.

Provide training and documentation for GIS users

You can provide training resources that you create, that Esri Training has made available, or that are recommended by the Esri Community.

Ensure training content you share with your users is updated and relevant. If you include screenshots, budget time and resources to keep them up to date. Maintain a database of documentation to track what to review when a new product version is released. As a GIS support staff, find a balance between creating and maintaining resources and using existing resources provided by Esri or your institution.

Communication approaches

There are several considerations to keep in mind when communicating with users:

- Intended audience
  - Everyone—Instructions to access ArcGIS, existing policies and guidelines, ways to get help, resources for support and training, and so on
  - A subset of users—What to do during offboarding (such as a specific guide for graduating students), updates to specific products only used by a subset of users, and so on
- Timeline and urgency
  - Critical—Information related to major updates, product retirements, student offboarding prior to graduation, and so on
  - Routine—Information such as reminders of institutional policies, how to handle content proactively during tenure at the institution, and so on
- Purpose
  - Prompt action—Requests to delete or find alternative storage methods for large items, reminders to use metadata, and so on
  - Provide information—Available support and training options, upcoming updates, product retirement, and so on

Use a variety of communication channels, depending on your institutional policies and preferences:

- ArcGIS capabilities, bulk emails, or your institution's internal channels
  - Use the ArcGIS Online information banner and access notice mechanisms during critical time periods (prior to graduation, for example, or after a major update).
  - Send periodic reminder bulk emails, following institutional governance, about managing content. Collaborate with IT colleagues to use your institutional bulk email solutions.
  - Use your institutional preferred communication methods, such as Slack, Microsoft Teams, or internal messaging apps.
- GEO Jobe email capabilities to communicate with users or a subset of users
- Scripting
  - Collaborate with IT colleagues to identify whether users are authorized and to identify a subset of users, groups, or content that meet a set of criteria for which you want to target a specific message.
  - Collaborate with IT colleagues to use scripting and ArcGIS APIs to send email notifications, in compliance with your specific institution's bulk email procedures and solutions.

The following sections provide examples of communication during onboarding, ongoing and active, and offboarding periods.

Onboarding

The goal of onboarding is to allow users access to ArcGIS, set expectations for reasonable and appropriate use, and supply next steps to learn more. It is important to do this in an automated, scalable manner. Do the following for new users:

- Provide information about how to access ArcGIS.
  - For institution members, set up SAML logins and new member defaults.
  - For external collaborators, consult your institution's policies and terminology for affiliates. While it's possible to use an ArcGIS login, it is recommended that you provide a SAML login as it is a scalable workflow and puts responsibility in the correct hands, without requiring a GIS administrator to monitor or remove access at the end of the project.
- Provide information about how to get help, support, and training by linking to your ArcGIS access website.

Ongoing and active communication

Communication with users throughout their tenure at the institution is important. Sharing product updates and new capabilities, as well as product retirements, is key to uninterrupted use. In addition, you can train users to manage their own content.

Note: When new capabilities are added to ArcGIS, review and add appropriate privileges to users' roles.

Users taking actions proactively, throughout their tenure at the institution, can help manage storage space, reduce the amount of content that is accumulated in ArcGIS Online, and improve curated data and app experiences.

Communicate content management guidelines consistently with users as part of your institution's data governance strategy. At least once per semester, as per the governance strategy you have established, communicate with users on the following topics:

- Clarify expectations of users who are part of collaborations (for example, research projects or course group projects), including responsible content ownership, what happens to this content once a collaborator leaves (such as graduation), and who manages the content if the collaboration comes to an end.
- Provide guidance on proper metadata, including established tags to flag important content.
- Delete inactive content (for example, test items or old work).
  - Provide suggestions for data management in a system that has a finite amount of storage. Keep only relevant versions of datasets or move old versions of the data outside the system.
  - Share the Delete items help documentation, which includes considerations and tips to know before you delete content.
- Train students to properly dispose of their content prior to graduation (for example, how to transfer their work, how to delete unneeded items, and the timeline for doing so).
- Explain how to seek assistance from administrators to store large items.
  - You can set alert options so that the owner of any item larger than a certain threshold (for example, 100 MB) will receive a message from the administrators.
  - In certain instances, you can make exceptions to policies (such as your institution's per-user feature storage limit) if there is an established process, including documentation of how an exception is handled and the responsibilities tied to it.
  - Consider various options to increase storage capacity.
- Ask GIS instructors to make content management part of their syllabus.
  - Consider placing excerpts in course syllabi or assignments. This could be a learning opportunity to understand cloud storage, various content management models, credits, and costs, especially since once students are employed in GIS roles across various industries, they will need to understand these business models. In the private and public sectors, the availability of licenses and credits is much more restricted than in education.
  - Dispose of unused groups and share the Manage groups documentation.

Offboarding

As users prepare to depart the institution, it is important that you provide guidelines on what they need to do before they leave and what will happen after they leave, specifically about what happens with their account and content.

- Proactively inform users of their responsibilities. For example, they need to dispose of their groups and content before they leave.
  - Post policies and guidelines publicly.
  - Send periodic reminder emails, referring to policies and guidelines.
- Allow users to change ownership of their content or transfer their training history.
  - Give users a custom role with privileges that allow them to change ownership of their content and groups. This can be set as part of the new member defaults.
  - A user can request Esri's assistance in transferring their training history in Esri Academy to a different account (for example, a public account). See "Managing Enterprise-wide Access to Esri E-Learning."

Communicate account information and data retention guidelines with users consistently as part of your institution's data governance strategy.

Communication about offboarding should happen prior to the end of each semester, at least two or three times per year, to allow ample time for users to take action. Provide guidance on the following:

- How long will they be able to access ArcGIS
- How to transfer ownership of items within the organization
- How to transfer ownership outside of the organization
- What will happen to their content if they do not take any action
- How collaborators in a group can proactively work with users who are leaving to transfer ownership of group content to a remaining member

Review Messaging for ArcGIS Online users leaving the university (students, faculty, staff) to share similar communication.

Continuous monitoring and organizational transparency

When you establish processes and procedures for monitoring ArcGIS use, ensure compliance with organizational transparency. This information may be important to the larger university community, including many stakeholders who don't have administrator access to the organization to see internal reporting structures like the administrator dashboard and reports. As you collect this information about your organization's health, you can share it with stakeholders for transparency and informed decision-making.

Monitor usage

There are multiple ways to monitor usage, each adding additional capabilities and levels of complexity.

Use ArcGIS Dashboards with no customization
You can use the ArcGIS status dashboard to understand and monitor how ArcGIS Online is being used. The dashboard is organized into five sections: Credits, Content, Apps, Members, and Groups. There is no scripting or customization required to use the ArcGIS status dashboard.

Learn more about dashboards in View status dashboard.

Customize the Admin Insights Template
The Admin Insights Template is built using ArcGIS Notebooks and ArcGIS Dashboards. It provides insights about an institution's users, content, and groups. It is composed of three dashboards, which are snapshots of your organization's information:

- **Users and Licenses**—The Users and Licenses dashboard provides visibility into how an ArcGIS organization's users are structured and how they are being used over time. You can identify inactive or underused accounts, validate licenses, and spot trends that may signal the need to adjust onboarding processes, licensing strategy, or user management policies.
- **Content**—The Content dashboard helps you understand what content exists across the organization and how it is being used. It highlights stale or unused items, supports validation of sharing and metadata standards, and tracks the growth of non-authoritative content. You can also monitor high-impact items (publicly shared, highly viewed, or large content) and explore upstream and downstream content dependencies.
- **Groups**—The Groups dashboard provides insight into how groups are being used to organize content and manage access across the organization. It helps identify groups that support critical sharing workflows, surface unused or low-value groups (such as empty or single-member groups), and validate that group sharing settings align with organizational access and collaboration policies.

The Admin Insights Template is a two-step deployment, and scripting is part of the deployment process. One notebook creates all the items in the ArcGIS Online organization that are necessary for the toolkit (a data table, the three dashboards, and an ArcGIS Experience Builder app), and the second notebook populates the content with the organization's information.

Build a custom usage dashboard
For additional transparency with your university community, you can build a usage dashboard and integrate information from external institutional systems, such as a user's degree programs or majors.

A customized dashboard allows for clearer visualization of named users and apps. When integrated with other institutional systems of record, the dashboard can provide additional information on usage across majors, degree programs, affiliation, and so on, which goes beyond what ArcGIS Dashboards and the Admin Insights Template could provide.

Refer to the "GIS for Everyone (...and how to build your own ArcGIS Dashboard to show it!)" blog article by a user from the University of Michigan, which uses a Jupyter notebook as a starting point. An alternative approach is shared by The Claremont Colleges.

Start collecting data as soon as possible to develop a historical record that can help with predicting future growth trends.

Dashboard examples

The following links are examples of how institutions have implemented their own customized dashboards to show the growing impact of ArcGIS across their respective communities and integrate information from other institutional systems.

- University of Michigan main user dashboard
  - Credit dashboard
  - Item dashboard
  - Empowered Data Stewardship story teaching users to view how much feature storage they are using
- University of California, Merced
- University of California, Davis
- Penn State
- University of Maryland
- The Claremont Colleges

The recommendations in this chapter can help you understand various options for providing continuous support and communication to users across the organization. Continuous monitoring of ArcGIS is also important to assess trends and needs, as well as plan for the future. All these actions should align with governance policies that you have put in place for managing ArcGIS.

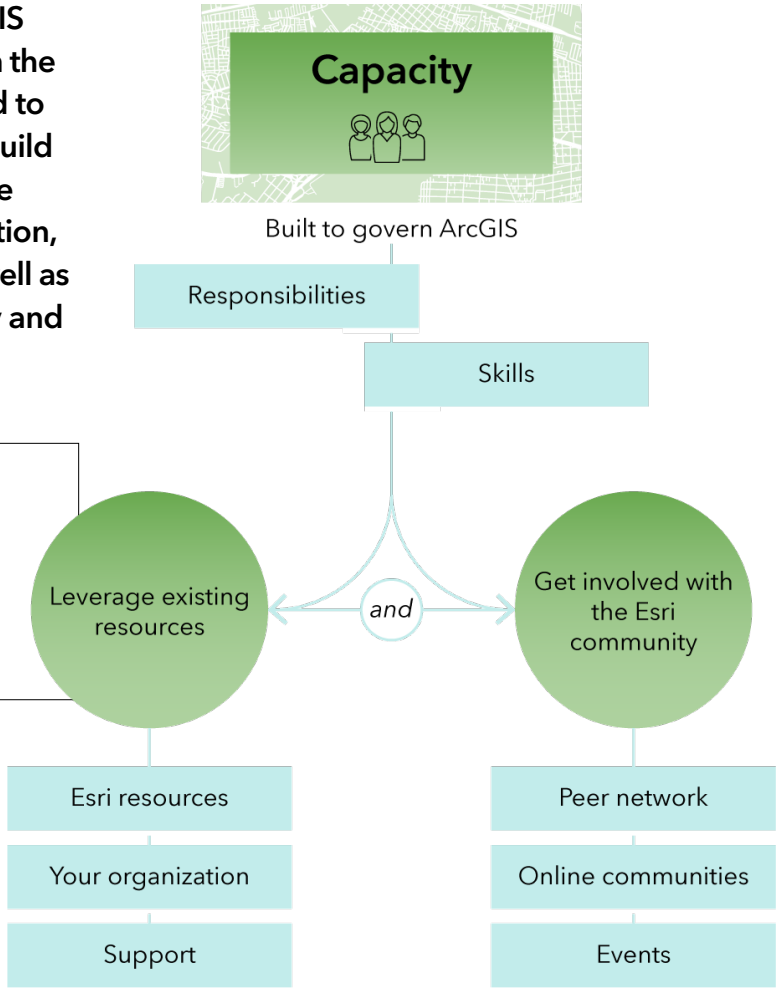
Chapter 5
Capacity



This chapter outlines options to equip GIS administrators and GIS support staff with the knowledge, skills, and resources needed to administer ArcGIS. The main goal is to build capacity for administration, which can be accomplished with training, documentation, web courses, and technical support, as well as being involved with the user community and learning from peers.

IN THIS CHAPTER:

- Build capacity to administer ArcGIS
- Use existing resources
- Get involved with the community



Build capacity to administer ArcGIS

Administration is a continuous, involved process that requires various responsibilities and skills that might not be currently available in-house. You must get the right training to bring existing staff up to speed or hire team members or external consultants who have the right skills.

Some of the responsibilities and skills required to manage daily operations of ArcGIS and enforce governance policies are below.

Administrators have the following key responsibilities:

- Administer users, groups, roles, and privileges
- Manage content life cycle, sharing rules, and ownership
- Monitor performance and system health
- Manage data services, publishing standards, and metadata

ArcGIS administration requires the following knowledge and skills:

- Cloud systems
- ArcGIS as a system of software components (apps, desktop, mobile, server, developer, and database)
- ArcGIS licensing (Named User or stand-alone options)
- ArcGIS Online or ArcGIS Enterprise administration
- Web GIS publishing, sharing, and service optimization
- Scripting or automation (Python, ArcPy, REST API)
- Monitoring tools (dashboards and logging systems)

There are instances in which an institution may choose to build, or bring, such capacity within the organization. In other instances, an institution may choose to invest in professional services or additional capabilities to accomplish the desired outcome. An example of acquiring additional capability at cost is purchasing Premium Feature Data Store, in contrast to spending time managing content storage through archiving and deleting.

This guide provides recommendations for governing ArcGIS and is intended as a starting point. At times, other resources may be necessary to provide GIS administrators or GIS support staff with the necessary skills to implement the recommendations in this guide or determine the best course of action.

Use existing resources

You can use professional development resources to learn and stay updated. These resources may include documentation, training, blogs, and industry websites.

Esri resources

Whether you need a quick tutorial or a deep-dive set of training materials, there are many resources available to you. The following collection of ArcGIS Online administration resources can help you acquire needed skills. Some of these resources are self-paced, stand-alone documents. Some provide a sequence of activities for in-depth learning.

Get started with the following introductory resources:

- Get started as an ArcGIS Online organization administrator documentation—Get started with ArcGIS Online, including activating the subscription, learning basic navigation and administration tasks, and using additional resources.
- Administer your organization tutorial series—A collection of videos, tutorials and articles focused on setting up ArcGIS Online; learning how to manage members, content, and groups; and working with credits and reports.
- ArcGIS Online Fundamentals learning plan
  - ArcGIS Online Basics web course—Learn about accessing web maps, apps, and other GIS resources that have been shared to an ArcGIS Online organizational site. Publish GIS data as services to an ArcGIS Online organizational site. Create, configure, and share web maps and apps. Manage ArcGIS Online user roles and privileges.
  - ArcGIS Online: Administration Essentials instructor-led course—Find content on an ArcGIS Online organizational site that meets your project needs. Create and configure web maps and web apps. Share maps and other content on your ArcGIS Online organizational site.
  - Creating and Sharing GIS Content Using ArcGIS Online—Publish hosted feature services and tiled map services. Create and configure a web map. Use a template to share a web map as a web app.

- ArcGIS Online Implementation Guide–PDF guide with essential tasks and best practices for setting up ArcGIS Online.
- Extend the Reach of Your GIS–PDF guide with additional ArcGIS Online tips and best practices.
- GIS in a Minute video series–Short, focused video series on various ArcGIS Online uses, capabilities, and functions.

Go further with advanced resources:

- ArcGIS Online: Administration Essentials learning plan
  - Configuring an ArcGIS Online Organization web course–Learn about and modify ArcGIS Online organization settings.
  - Administering ArcGIS Online Members web course–Add members and assign user types, roles, credits, and licenses to members of an ArcGIS Online organization. Modify member access to an ArcGIS Online organization.
  - Administering ArcGIS Online Content web course–Organize ArcGIS Online content to make it more discoverable for your organization. Manage content created within your ArcGIS Online organization.
  - Monitoring an ArcGIS Online Organization web course–Explore the impact of usage and activity on an ArcGIS Online organization through an interactive dashboard and reports.
  - Architecting the ArcGIS System: Best Practices document–Understand ArcGIS systems architecture and implementation strategy.
- ArcGIS Architecture Center–Workflows for designing, architecting, and building ArcGIS as a system.

Esri Support

Esri can provide support in various ways:

- Technical Support–If you have an Esri license agreement, you are entitled to several Esri authorized support callers (the number of authorized support callers varies depending on the type of agreement). As a GIS administrator or GIS support staff member, you should be one of those support callers. Contact Esri Technical Support about technical issues you may encounter.
- Professional Services–One option for developing capacity to help with ArcGIS governance is working with Esri Professional Services in a consulting engagement. The Esri experts can help if developing capacity within your organization is not a viable option or if your institution has a complex ArcGIS deployment.
- Account Management Support–Institutions with Education Institution Agreements have a dedicated education account manager. Contact your account manager for additional support or to ask any questions. If you do not know who your account manager is, use the Account Manager Assignments app. Alternatively, reach out to highered@esri.com. For customers outside the US, reach out to your local Esri distributor office.

Your organizational resources

Your institution may have its own training resources. Seek out guidance from colleagues with similar roles who are managing analogous institutional systems.

If you do not have any current training resources or plans created specifically for your own organization, consider creating a workforce development plan for managing and governing ArcGIS.

Get involved with the community

There is a large network of GIS administrators or GIS support staff with similar needs. Ask your questions, join an online conversation, read the latest blogs, and connect with colleagues to help answer any additional questions.

Leverage peer networks for learning and best practices

To communicate, collaborate, and learn from peers, join Esri Community, particularly the Education Community and Education Blog.

- Subscribe to the Education Blog for news and posts, including automatic emails when a new blog article is posted. You can filter blogs for GIS administration or licensing-related topics, specifically by choosing the Administration and Licensing Best Practices labels. Being part of this community, you will learn information about product updates, education program changes, educational resources, events, and many other education-related matters. Discussions and contributions are welcome in this community.
- You can also subscribe to other Esri Community areas, which focus on specific products, industries, or capabilities.
- You can browse, search, and subscribe to the ArcGIS Blog to learn about specific ArcGIS applications.
- For additional information, check the higher education community pages, along with the IT Support section of the education industry pages.

Join events

Regularly check the Higher Education Events web page for upcoming events, including webinars, conferences, summits, and more. You can also sign up for the Esri education newsletter to receive timely updates and relevant content for administrators.

You can also browse past proceedings and event recordings for specific topics of interest. Some of these events are geared toward instructional resources and instructional materials, while others focus on GIS administration and governance best practices.

In this chapter, you learned about various resources you can use to get equipped with GIS administration skills. These resources include documentation, blogs, web courses, training, and various ways to engage with the community and learn from peers. In addition, if building capacity within your institution is not possible, various Esri-provided services, such as consulting services, are available to help you implement ArcGIS governance standards.

Appendix

For security and SAML best practices, including information about automatic join risks or mitigations, see the ArcGIS Trust Center.

For help and best practices implementing SAML logins, see Set up SAML logins.

For more information about using custom roles as part of credit control, see Understand credits.

The ArcGIS Blog article "Managing credits in ArcGIS Online" explains custom roles, budgeting, and monitoring.

See Configure member roles to learn about privilege design and reserved privileges.

To set limits on assigning administrator roles as defaults, see Configure new member defaults.

To keep user types aligned to workload capacity, roles at the institution, and governance policies, see Manage user types in the ArcGIS Architecture Center.

Take the Survey

Thank you for reading our ebook! We value your feedback. Please take a few minutes to share your thoughts and help us improve future resources.



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