Change Management for the ArcGIS Platform for Local Government

Ayan Mitra

Seth Lewis

What is Change Management?

- **Process used to ensure that changes to a product or system are introduced in a controlled and coordinated manner**

- **Develop a Request for Change - > Obtain Change Acceptance -> Initiate Testing -> Implement on Production -> Report the Change**

Data Governance and Change Management

We are going to focus on Change Management for GIS with an emphasis on Data Governance

Review of the tools that Esri provides to make Data Governance useful

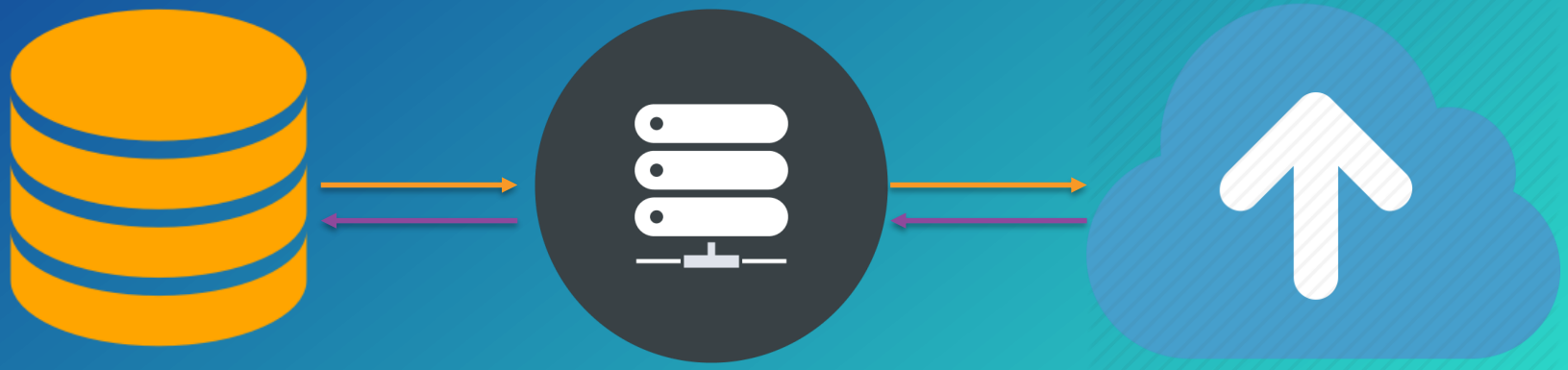
Challenges to Data Governance

- **Data ownership and lack of cross-business unit coordination**
- **Lack of data governance understanding**
- **Resistance to change, transformation or accountability**
- **Lack of executive sponsorship and buy-in**
- **Personnel changes**

What's our User Story?

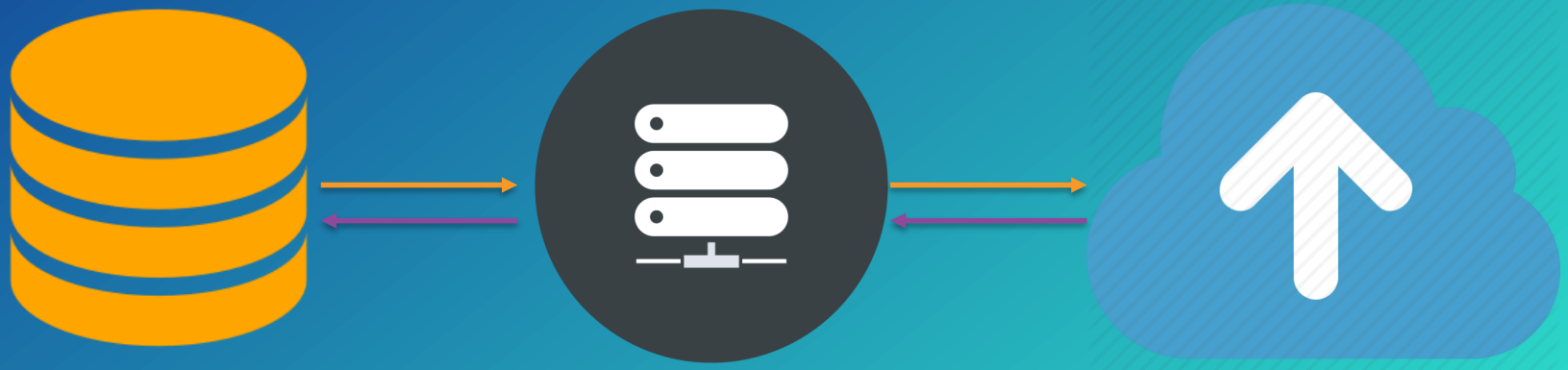
We aim to let a user answer the following question:

If I change this item what other content in my enterprise will be affected?



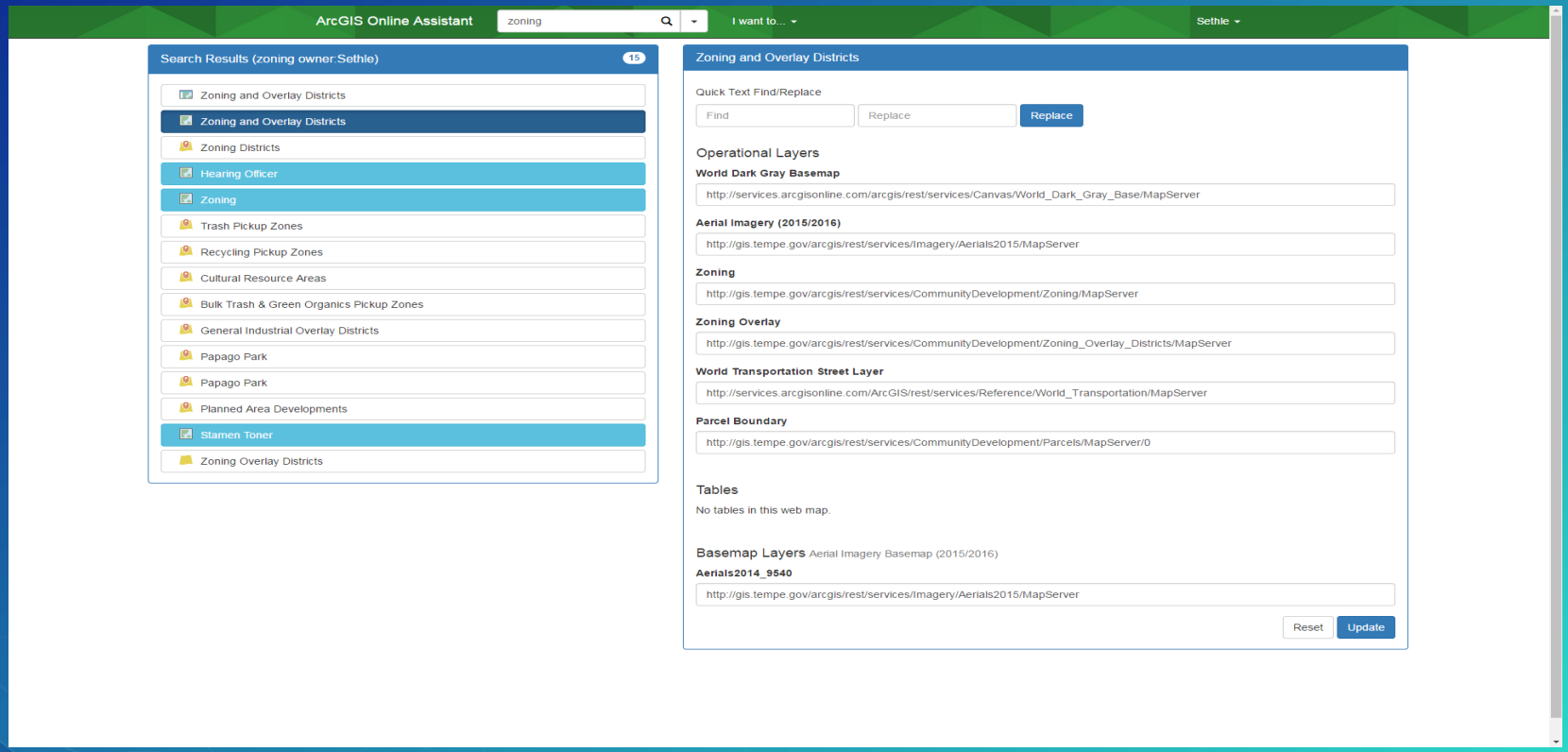
What's our User Story?

Application -> Web Map -> Map or Feature Service -> Layers in a geodatabase



Existing Tools

- **ArcGIS Online/ArcGIS Portal Assistant**



- **ArcREST Python Package**

ArcGIS REST API

- **Core API for consuming webGIS content across the ArcGIS platform**
- **Allows for management of resources both on premises (e.g., ArcGIS Server, ArcGIS Portal) and in the cloud (e.g., ArcGIS Online)**
- **Exposes each item with a unique id as JSON**

ArcGIS API for Python

- **Integrates Python 3x with ArcGIS REST API**
- **Optionally allows for user of Jupyter notebooks to display inputs and outputs**
- **Allows for rapid prototyping of management or analytical workflows**

ArcGIS API for Python

- **Which webapps consumes which web maps?**
- **Which REST URLs are consumed in which web maps?**
- **What are the properties for all of the items in a portal?**

ArcGIS Server (Service Manifest)

- **The service manifest resource documents the data and other resources that define the service origins and power the service. This resource will tell you underlying databases and their location along with other supplementary files that make up the service.**
- **This helps us to programmatically make the relationships and connections between ArcGIS server services and data stored (in our case) in SDE.**
- **http://server:port/arcgis/admin/services/[<folder>]/<service>/iteminfo/manifest/manifest.json**

ESRI SDE System Tables

- **The system tables for a geodatabase enforce geodatabase behavior, store information about the geodatabase, and keep track of the data stored in the geodatabase.**
- **Examples of system tables are SDE_layers, GDB_ITEMTYPES, GDB_ITEMS**
- **Tools that we use to work with system tables (SQL server) –**
- **Use sp_who in SQL server**
- **Use redgate_dlm_dashboard or other tools to monitor schema changes to the geodatabase**

Custom Application for Change Management Using ArcGIS REST API and d3

At its core this web application contains an inventory of the following resources.

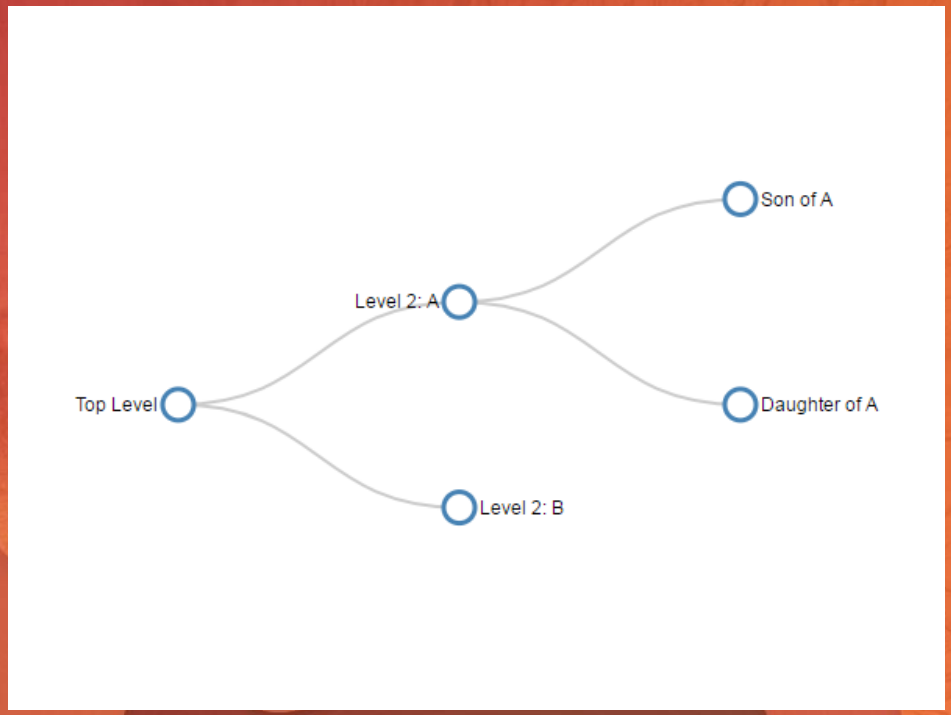
- **An inventory of Applications.**
- **An inventory of Web Maps**
- **An inventory of Web GIS Services**
- **An inventory of Layers**

Custom Application for Change Management Using ArcGIS REST API and d3

- **The application then establishes relationships between each of these resources.**
- **The relationship is bidirectional, so that we can start at any end of the relationship chain.**
- **IE – Look at an Application and find out all the SDE layers that are associated with that application.**
- **OR**
- **Look at a SDE layer and find all the web maps or apps associated with that layer**

Custom Application for Change Management Using ArcGIS REST API and d3

- **We use the ArcGIS Rest API to periodically loop through the rest endpoints and obtain a list of resources that we can use**
- **These resource lists are then copied to a persistence layer (either a relational database or a graph database).**
- **Visualization is done with the popular d3 web visualization library in the form of a node link diagram that relates parents (apps, web maps) to children (rest endpoints and SDE layers).**



Demonstration

Questions