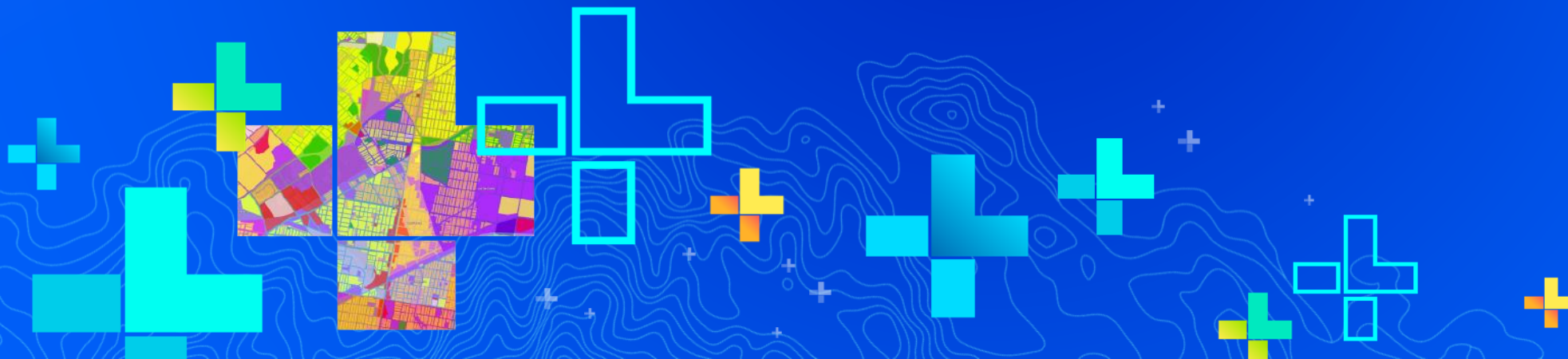




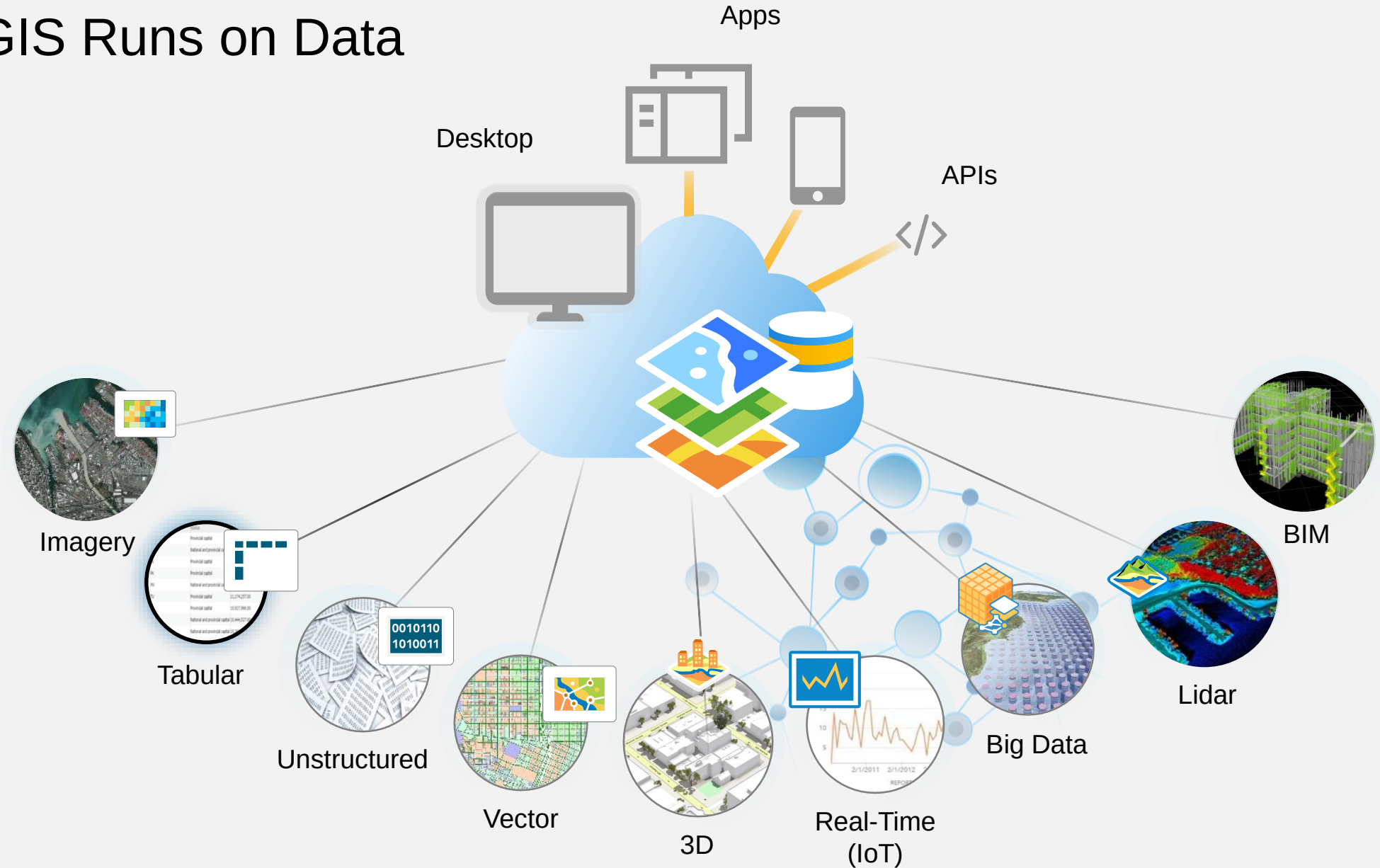
Enterprise Geodatabase: Introduction to Multi-User Geodatabases

James Gough
Shannon Shields

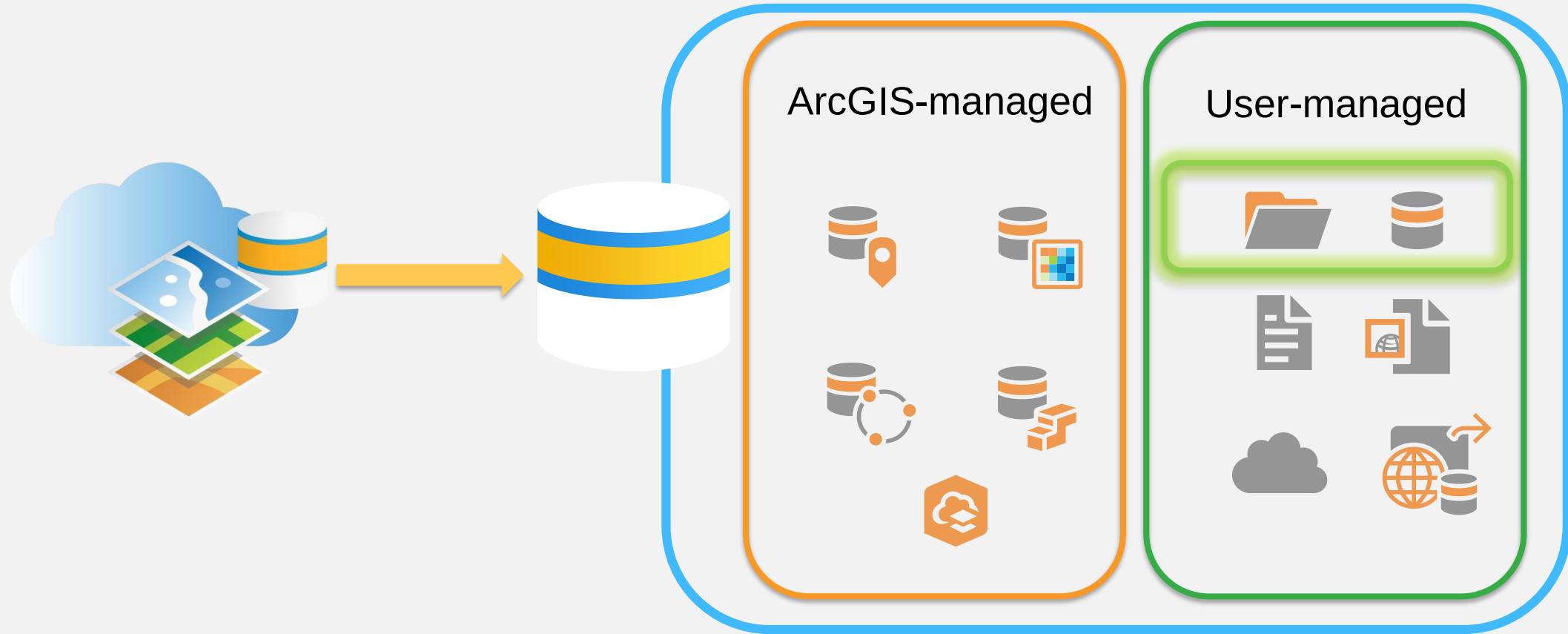
SEE
WHAT
OTHERS
CAN'T



ArcGIS Runs on Data



Many Data Stores, Many Choices



The Geodatabase

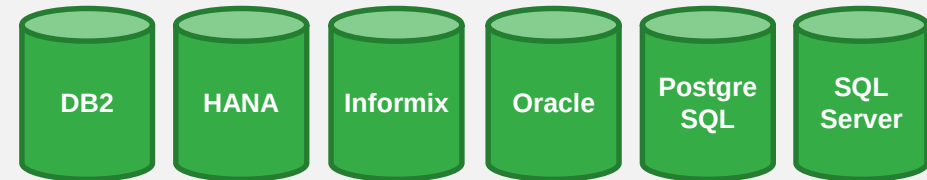
- Physical store for your GIS data
- Native data structure for ArcGIS
- Rules for managing data integrity
 - Topology
 - Domains, subtypes, relationship classes, attribute rules
- Advanced data models
 - Networks, parcel management etc



Enterprise Geodatabase

All the functionality of a file geodatabase +

- Transaction models to support multi-user workflows
 - Versioning
 - Archiving
- Advanced models
 - Utility Network
- BYOD – Bring Your Own Database
 - Integration
 - Administration
 - Security, backups
 - HA/DR



Enterprise Geodatabase Overview

- Create a geodatabase
- Populate a geodatabase
- Secure geodatabase data
- Edit geodatabase data
- Geodatabase administration

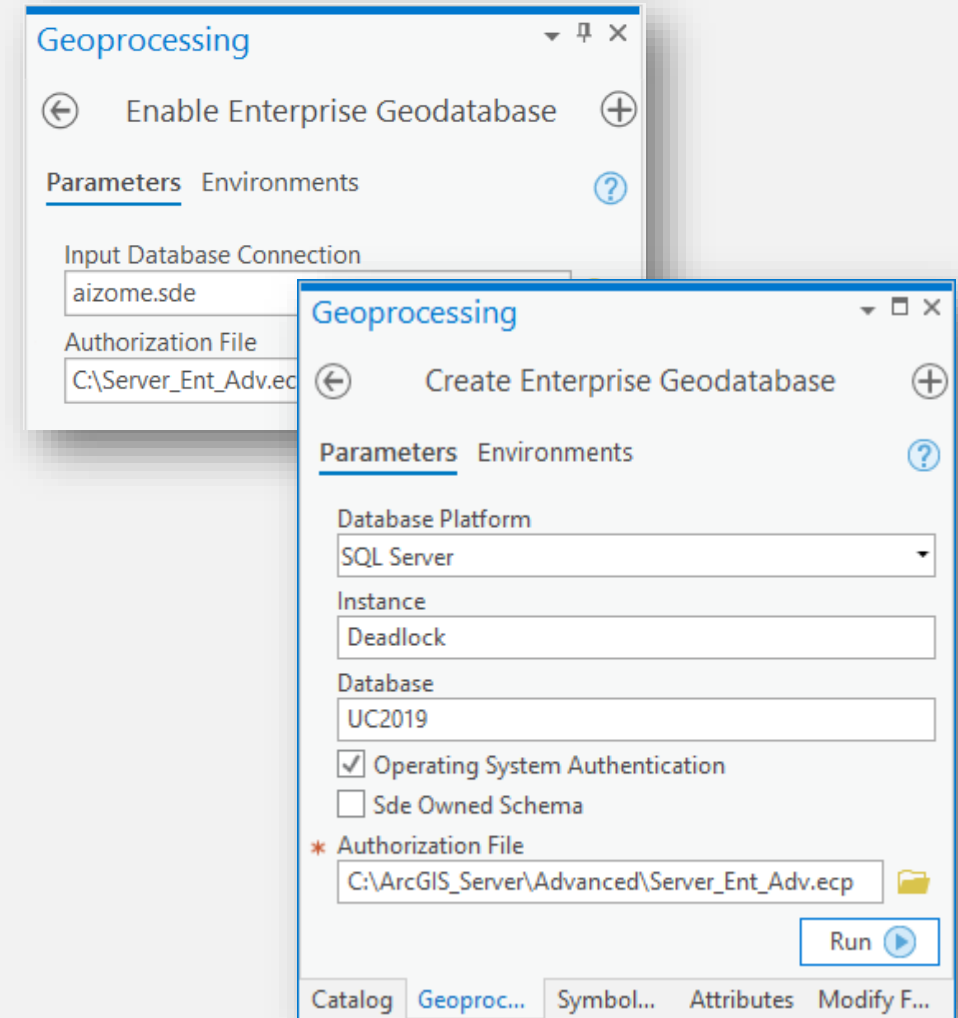


Create a geodatabase



Create a geodatabase

- Create Enterprise Geodatabase GP Tool
 - Oracle, SQL Server, PostgreSQL
- Enable Enterprise Geodatabase Tool
 - IBM DB2 or Informix, SAP HANA
 - Azure & RDS
- Administrator privileges on DBMS instance
- License file
- Specifics for each DBMS: [Create an enterprise geodatabase](#)



Geoprocessing

← Create Enterprise Geodatabase →

Parameters Environments ?

Database Platform
Oracle

* Instance

Database Administrator Password

Geodatabase Administrator
sde

Geodatabase Administrator Password

Tablespace Name

* Authorization File
 

Run 

Catalog Geoprocessing Symbology

Creating a geodatabase

Demonstration

Populate a geodatabase



Populate a Geodatabase

Create new, empty datasets

- Populate manually or import

Import

- Feature Class to Feature Class
- Feature Class to Geodatabase tool

Copy/Paste

- Context menu
- Copy tool

Register existing data

- Register with Geodatabase tool

Feature Classes and Tables

ObjectID

MyProject - ArcGIS Pro

Parcel Merging X

Field: Add Delete Calculate Selection: Zoom To Switch Clear Delete Copy

OBJECTID	Shape	Landuse Code	Landuse Description	Future Landuse Desig	Zoning Code	Zoning Description	Zoning Variance	Area In Square Feet	Area Value I
103	Polygon Z	13	TOWN HOUSE	MEDIUM DENSITY RE...	R3A PUD	MEDIUM DENSITY M...	N	3149	ACT
104	Polygon Z	13	TOWN HOUSE	MEDIUM DENSITY RE...	R3A PUD	MEDIUM DENSITY M...	N	2663	ACT
105	Polygon Z	13	TOWN HOUSE	MEDIUM DENSITY RE...	R3A PUD	MEDIUM DENSITY M...	N	2663	ACT
106	Polygon Z	13	TOWN HOUSE	MEDIUM DENSITY RE...	R3A PUD	MEDIUM DENSITY M...	N	3592	ACT
107	Polygon Z	13	TOWN HOUSE	MEDIUM DENSITY RE...	R3A PUD	MEDIUM DENSITY M...	N	3764	ACT
108	Polygon Z	13	TOWN HOUSE	MEDIUM DENSITY RE...	R3A PUD	MEDIUM DENSITY M...	N	3736	ACT
109	Polygon Z	11	SINGLE FAMILY	OFFICE/RESEARCH A...	N/A	NOT APPLICABLE	U	87120	ACT
110	Polygon Z	11	SINGLE FAMILY	OFFICE/RESEARCH A...	N/A	NOT APPLICABLE	U	148104	ACT
111	Polygon Z	30	TRANSPORTATION U...	OFFICE/RESEARCH A...	ORI	OFFICE/RESEARCH/L...	N	75750	ACT
112	Polygon Z	11	SINGLE FAMILY	LOW DENSITY RESID...	N/A	NOT APPLICABLE	U	23725	ACT
113	Polygon Z	11	SINGLE FAMILY	LOW DENSITY RESID...	R1A	LOW DENSITY SF DIS...	N	12869	EST
114	Polygon Z	11	SINGLE FAMILY	LOW DENSITY RESID...	R1A	LOW DENSITY SF DIS...	N	14039	EST

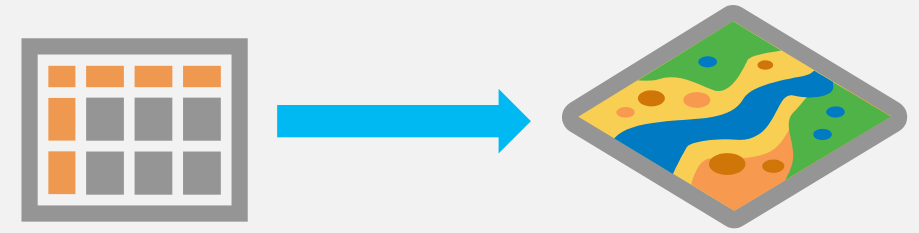
0 of *2,000 selected Load All

Filters: 100%

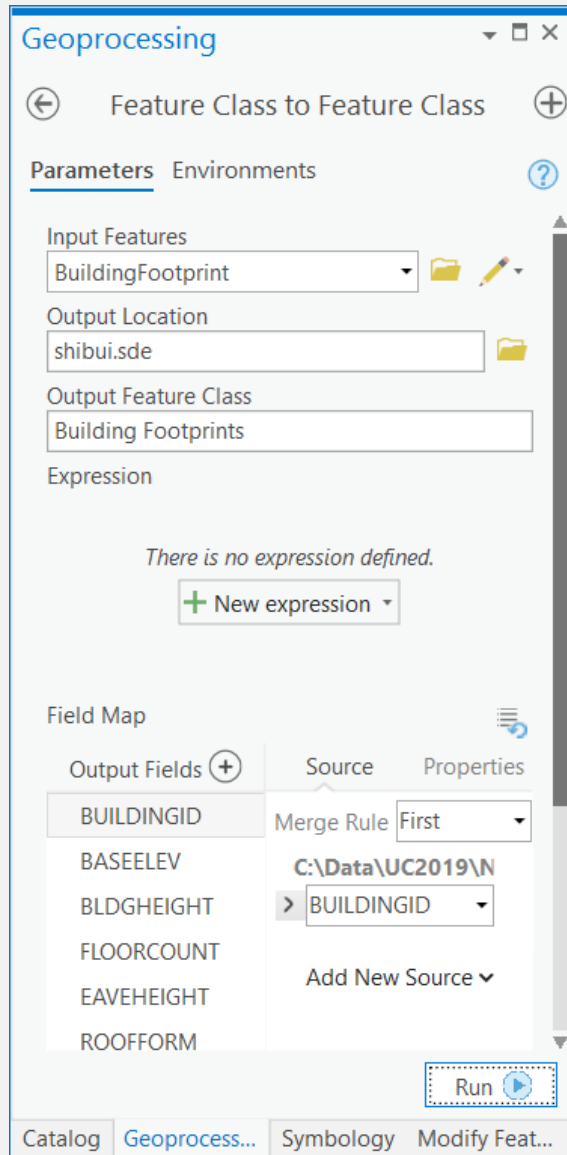
Spatial column

- ObjectID
 - Unique integer
 - ArcGIS-maintained
- Spatial column
 - Single entity type
 - Single spatial reference
- Indexes built automatically on ArcGIS-maintained fields

Registering existing data



- ObjectID
 - Can use your own field or let ArcGIS create an ObjectID field
 - Registered views must have an existing field
- Shape validation
 - Default is shape of first record
 - Shapes must be valid and match chosen entity type
 - ≥ 10.6 / 2.1 no longer validate shapes on fetch (drawing)



Loading Data

Demonstration

Secure geodatabase data

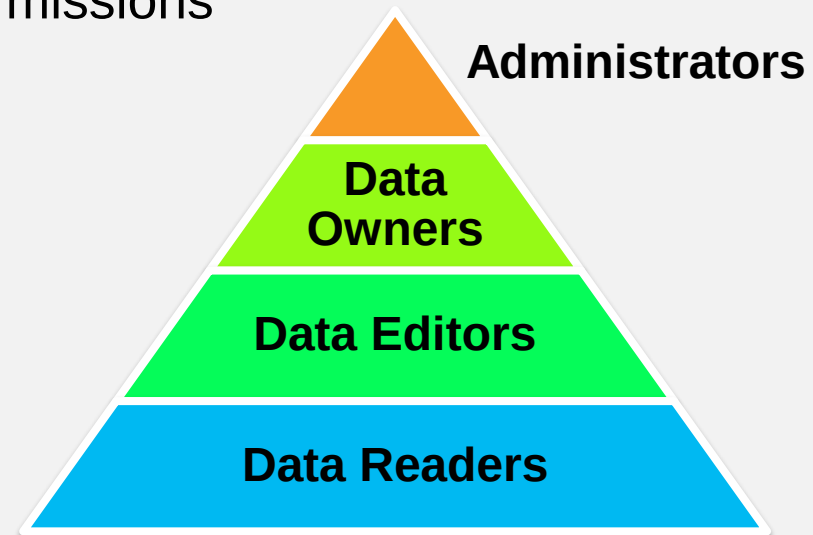


Security concepts

- Data Definition Language (DDL) permission
 - Ability to create/alter tables, views and other objects
- Data Manipulation Language (DML) permission
 - Ability to view or edit the data in tables
- Roles
 - Individual members of a role inherit permission granted to role
- Granting / Revoking
 - By default no one has any permission
 - DDL and DML permission must be granted

ArcGIS security concepts

- Owner (creator) of an object is only user that can make schema changes
 - Make this a dedicated user (not the gdb admin user)
- Create users and role with DBMS software or with GP tool
 - Always use ArcGIS tools to grant/revoke DML permissions
- Law of least privileges
 - Only grant permission required to do work



Geodatabase permissions

- Permission to create things (DDL)
 - Feature class, table, view -> needs to be granted at dbms level
 - DBMS-specific help topic lists all required [permissions](#)
 - Feature dataset, domains -> automatic if you can connect to geodatabase
- Permission to read/edit data(DML)
 - Select
 - see all the data in a class
 - Edit (Insert, Update, Delete)
 - edit all the data in a class
- Feature Datasets – apply matching permission to all participating classes



Securing Data

Demonstration

Edit geodatabase data



Editing in an Enterprise Geodatabase

Transaction = unit of work

Short transactions – like individual edits, no undo/redo

- Non-versioned editing

Long transaction – unit of work might involve many physical edits

- Ability to undo-redo
- No contention with other editors
- Ability to detect conflicts
- Versioning
 - Traditional – client/server, edits in side-tables
 - Branch – services-based editing, streamlined structure

Enterprise Geodatabase: Introduction to Multi-User Editing

- Tuesday 4-5pm in room 30D
- Wednesday 1-2pm in room 30E

Geodatabase administration



Geodatabase Administration

- Regularly scheduled tasks to keep your geodatabase running smoothly
- ArcGIS GP tools
 - Maintenance
 - Query performance - Indexes, statistics
 - Editing-related
 - traditional versioning compress
- DBMS tools
 - Maintenance
 - Query performance - Indexes, statistics
 - Backups
 - Monitoring performance

In conclusion

- Create a geodatabase
- Populate a geodatabase
- Secure geodatabase data
- Edit geodatabase data
- Geodatabase administration

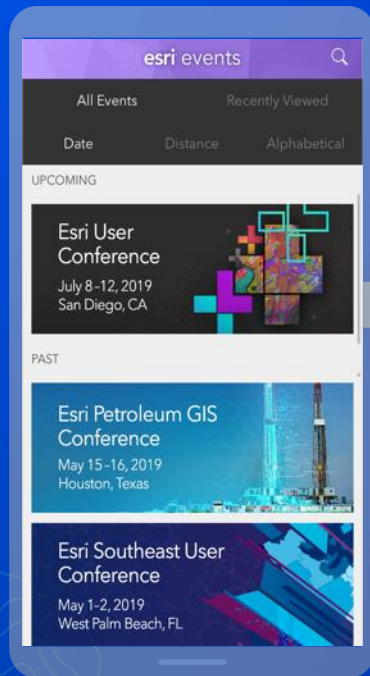


To learn more...

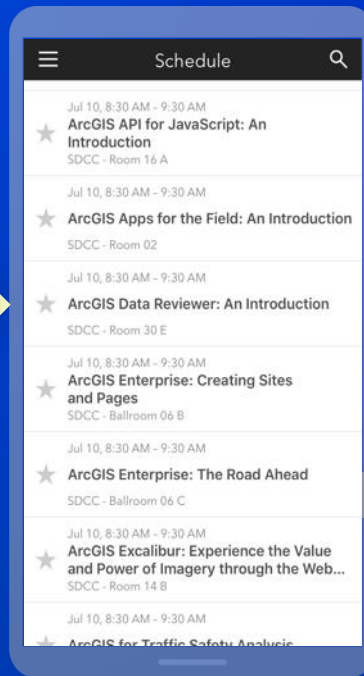
- Enterprise Geodatabase Administration:
 - [Enterprise Geodatabase: Topics in Oracle Administration](#)
 - [Enterprise Geodatabase: Topics in PostgreSQL Administration](#)
 - [Enterprise Geodatabase: Topics in Microsoft SQL Server Administration](#)
 - [Enterprise Geodatabase: Performance Troubleshooting](#)
 - [Enterprise Geodatabase: Automating Administration Tasks Using Python](#)
- Multi-user geodatabase editing:
 - [Enterprise Geodatabase: Introduction to Multi-User Editing](#)
 - [Distributing Your Data: Workflows and Best Practices](#)
- Maintaining data integrity:
 - [Geodatabase: Setting Up Your Geodata Schema in ArcGIS Pro](#)
 - [Geodatabase: Ensuring Data Quality with Attribute Rules and Contingent Values](#)
 - [Geodatabase: Leveraging Relationship Classes](#)
 - [Geodatabase: Ensuring Data Quality with Topology](#)

Please Share Your Feedback in the App

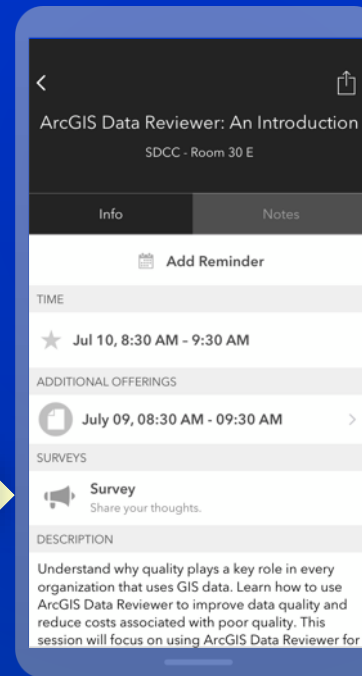
Download the Esri Events app and find your event



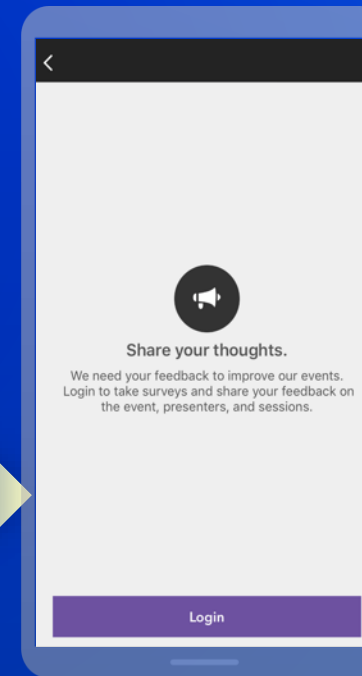
Select the session you attended



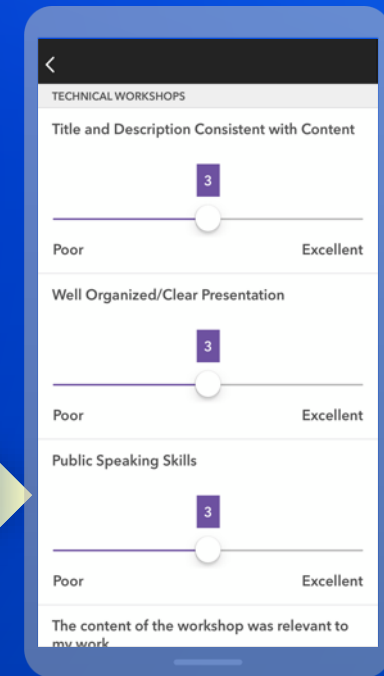
Scroll down to "Survey"



Log in to access the survey



Complete the survey and select "Submit"



Questions?

