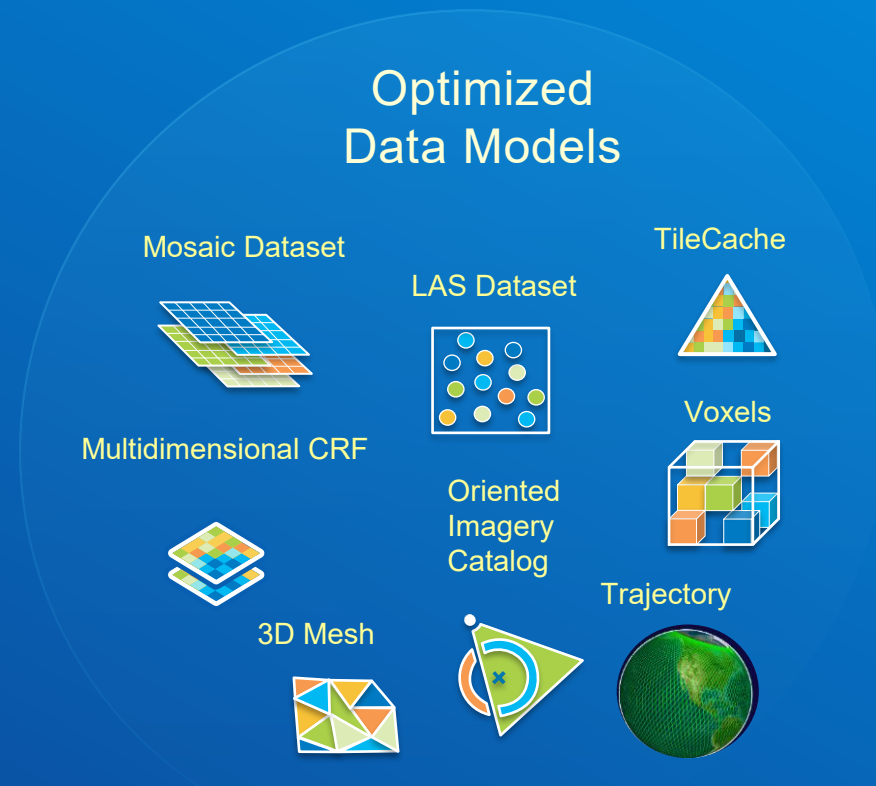


Raster Data Model

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Data Model

- [data architecture] The rules or specifications by which data is defined and organized within a system, such as an application or a database. In a GIS data model, these specifications can include spatial representation (for example, points, lines, and polygons), attributes, relationships, spatial or topological constraints (for example, a water valve cannot be drawn midspan on a pipe), cartographic portrayal, and metadata requirements.

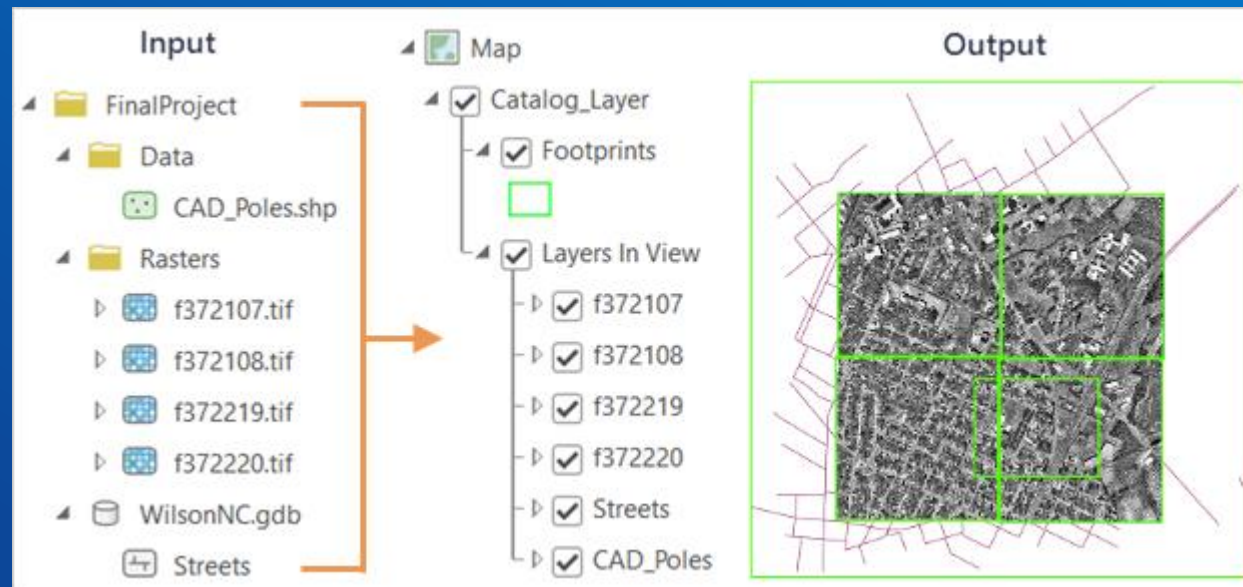
Catalog dataset Catalog layer

- **Catalog Dataset:** This is a container stored in a geodatabase that holds item references called catalog dataset items. These items are references to various data sources such as local files, network shares, or portal items. You create and manage catalog datasets using geoprocessing tools, and they serve as a centralized, manageable collection of data references
- **Catalog Layer:** This is a composite layer that you add to maps or scenes to visualize and interact with the contents of a catalog dataset. A catalog layer dynamically loads and displays dataset items within the current map or scene extent and scale. It organizes and previews multiple datasets intuitively, allowing filtering by attributes like project status or time.

In summary, the catalog dataset is the underlying container of spatial data references managed in a geodatabase, while the catalog layer is the visual and interactive representation of that dataset within maps or scenes. You create and maintain catalog datasets, then add them as catalog layers to your maps for exploration, filtering, and dynamic visualization. Multiple catalog layers can reference the same catalog dataset, but each layer is a separate view of that dataset

Catalog Dataset

A catalog layer is a collection of item references to local and shared datasets, layers, services, and workspaces from across various work environments. The references, which are catalogued and added as items in a dataset, can be visualized, filtered, and queried dynamically in maps and scenes.



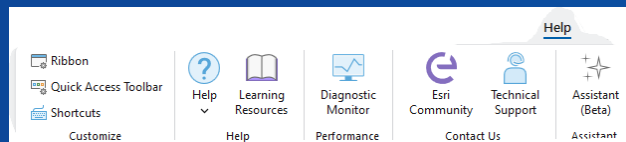
The layer is named a catalog layer because it manages the references to large collections of items, service layers, packages that are drawn as layers, and portal items—much like a catalog. It is a sufficient way to view geographic data and organize data sources intuitively.

When is it suggested to use Catalog dataset?

A catalog dataset in ArcGIS Pro should be used when you need a centralized, manageable, and dynamic way to organize and reference multiple datasets, layers, rasters, and services from various sources. It is especially helpful in these situations:

- You have large collections of spatial data from different sources and want to keep them organized in one place.
- You need to manage collections of layers, rasters, and services as references without duplicating the data.
- You want to filter and visualize dataset items based on attributes like project status, department, or time.
- You want to maintain a spatial footprint for each item to visualize their geographic extent.
- You need to add unrelated data to a single catalog dataset and use it across multiple maps or scenes in a project.

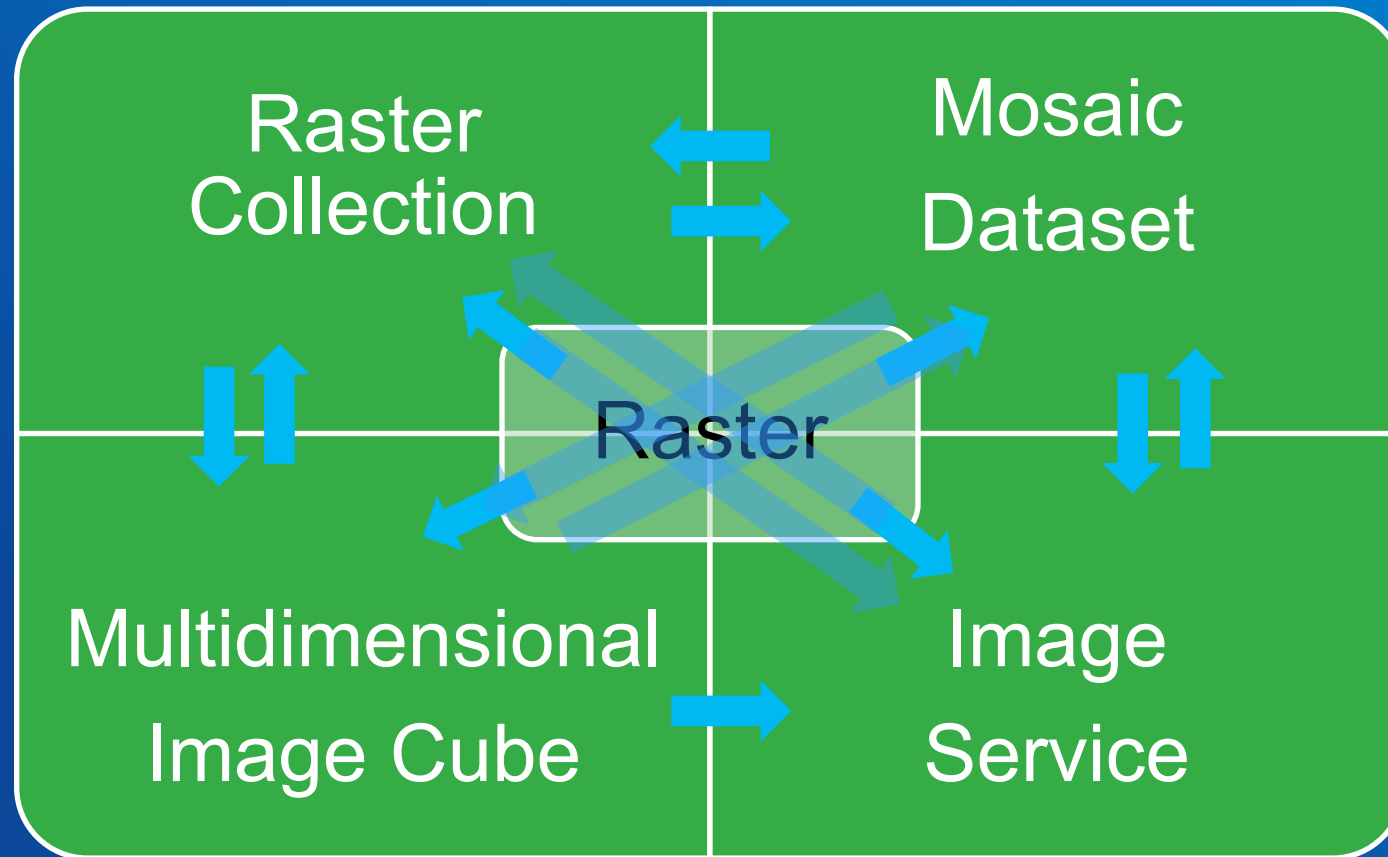
Catalog datasets are best employed when you want to centrally manage and visualize a large, diverse collection of spatial data references efficiently within ArcGIS Pro projects.



When should I use the Catalog Dataset?

A seamless model

Everything is connected



Analysis



Display

The Raster Collection

Streamlined Processing against data

Filter

- Spatial Extent
- Time
- Geometry Constraints
- Query Clause
- Properties

Map

- Spatial Extent
- Time
- Geometry Constraints
- Query Clause
- Properties

Reduce

- Create a single output raster based upon specified constraints
- Reduce Summarizing pixels
 - Min, max, mean, sum, median, etc.



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