



# XXVII FIG CONGRESS

11-15 SEPTEMBER 2022

Warsaw, Poland

Volunteering  
for the future –  
Geospatial excellence  
for a better living

## ARCGIS & LADM ISO 19152

### From Conceptual to Implementation

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Katherine Smyth (*United States*)



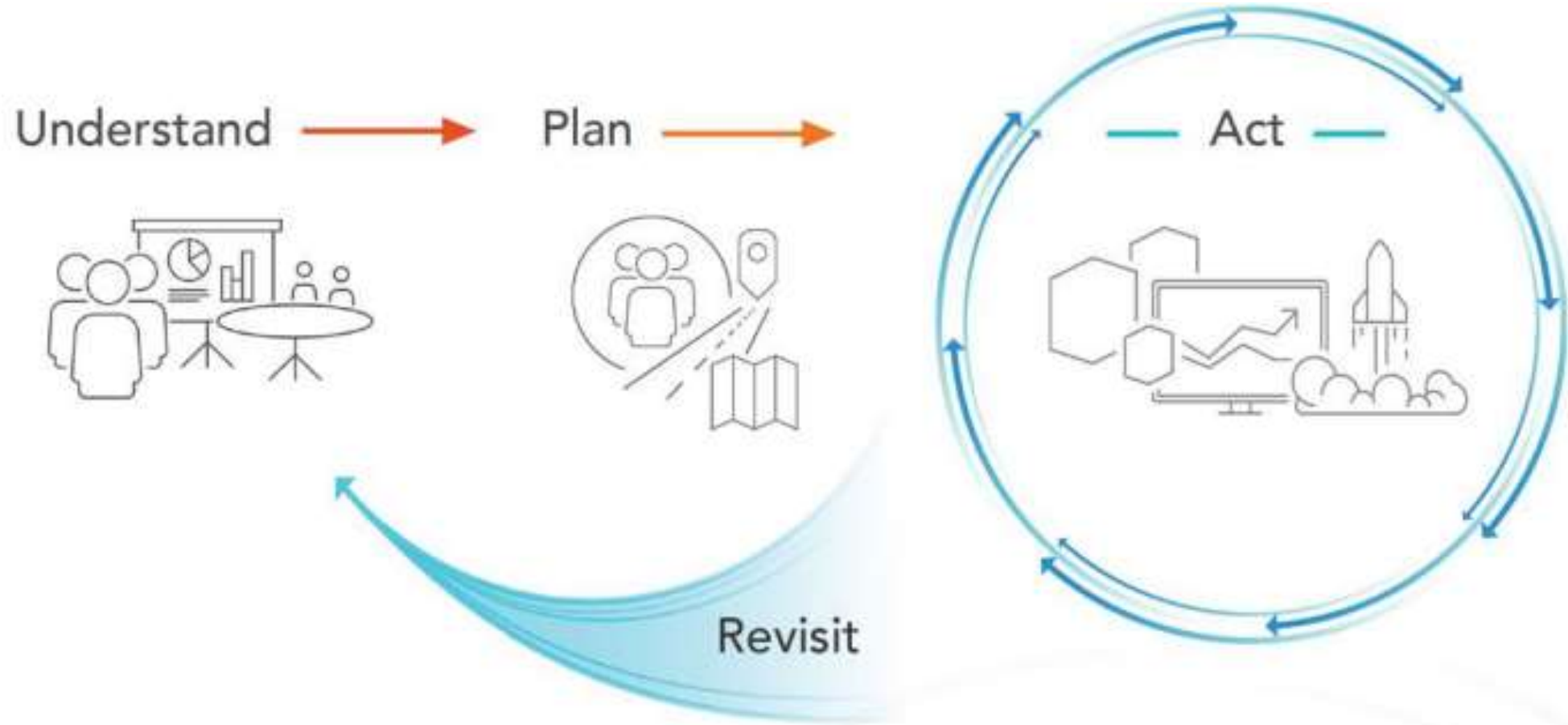
ORGANISED BY



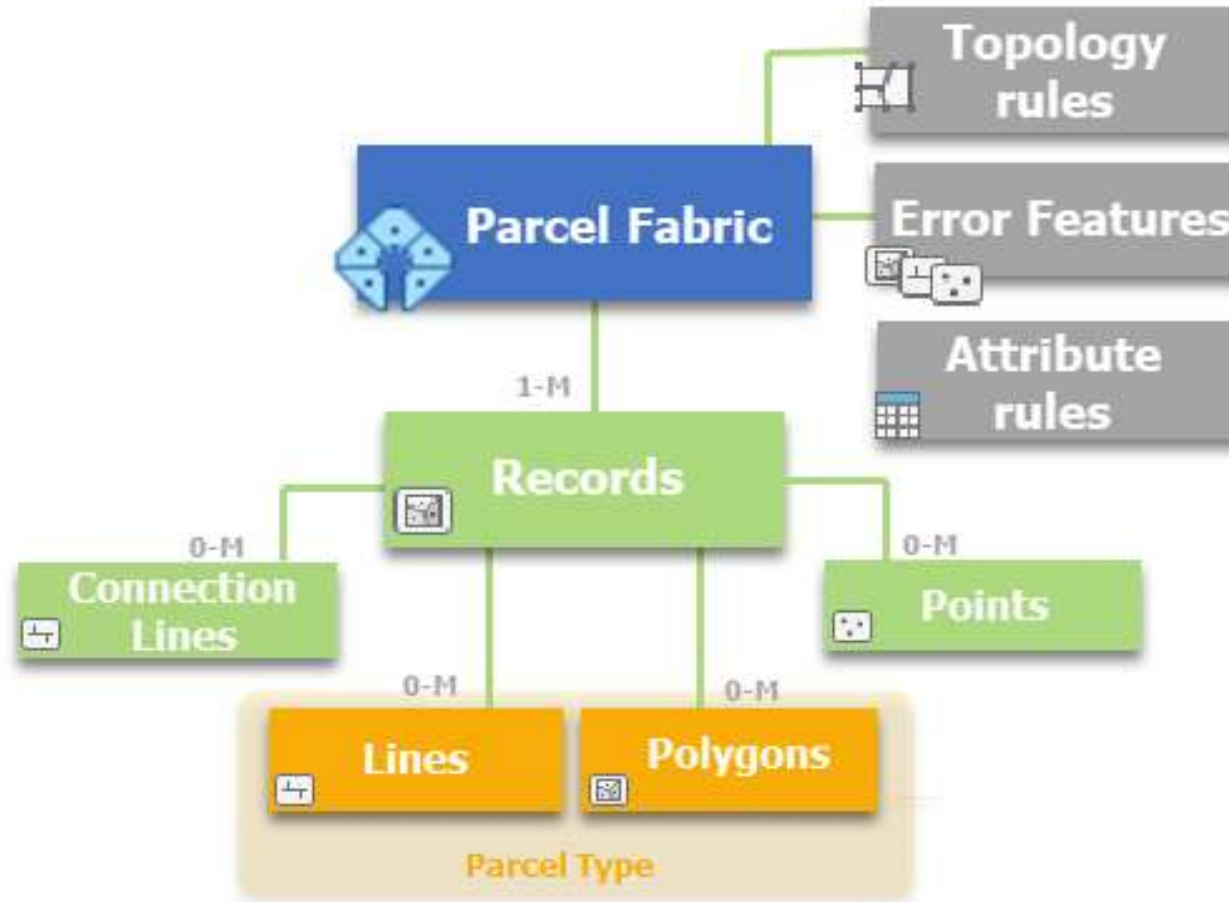
PLATINUM SPONSORS



# Geographic Approach



# Parcel Fabric Data Model





Feature Layer    Parcels    Shboygan County 29 Iteration...

Project    Map    Insert    Analysis    View    Edit    Imagery    Share    Appearance    Labeling    Data    Records    Quality

Command Search (Alt+Q)    Not signed in

Save    Discard    Show All    100%    Show Only Active    Create Record    Select    Parcel Features    Attributes    Clear

Tools: Traverse    Merge    Clip    Divide    Change Parcel Type

Construct: Copy Lines To    Create Seeds    Build    Show    5    ftUS    Align Parcels

Alignment

All cadastral features are associated to their source

- Parcel Fabric
- Points
- Subs and Condos
- Spatial Unit
  - Historic
  - Spatial Unit Lines
  - Spatial Unit
- Lots and Units
- Encumbrance
- Connection Lines
- PLSS\_Section
- PLSS\_Quarter\_Section
- PLSS\_Township
- World Topographic Map



Project | Map | Insert | Analysis | View | Edit | Imagery | Share | Time | Records | Quality | Diagram

Entity Type | Relationship Type | Add Link | Parent to C | Add

Symbology | Label | Appearance | Labeling

Explore | Navigate

Select | Select By | Selection

Lock | Change Layout | Layout

Pause | Display Links On Map | Tools

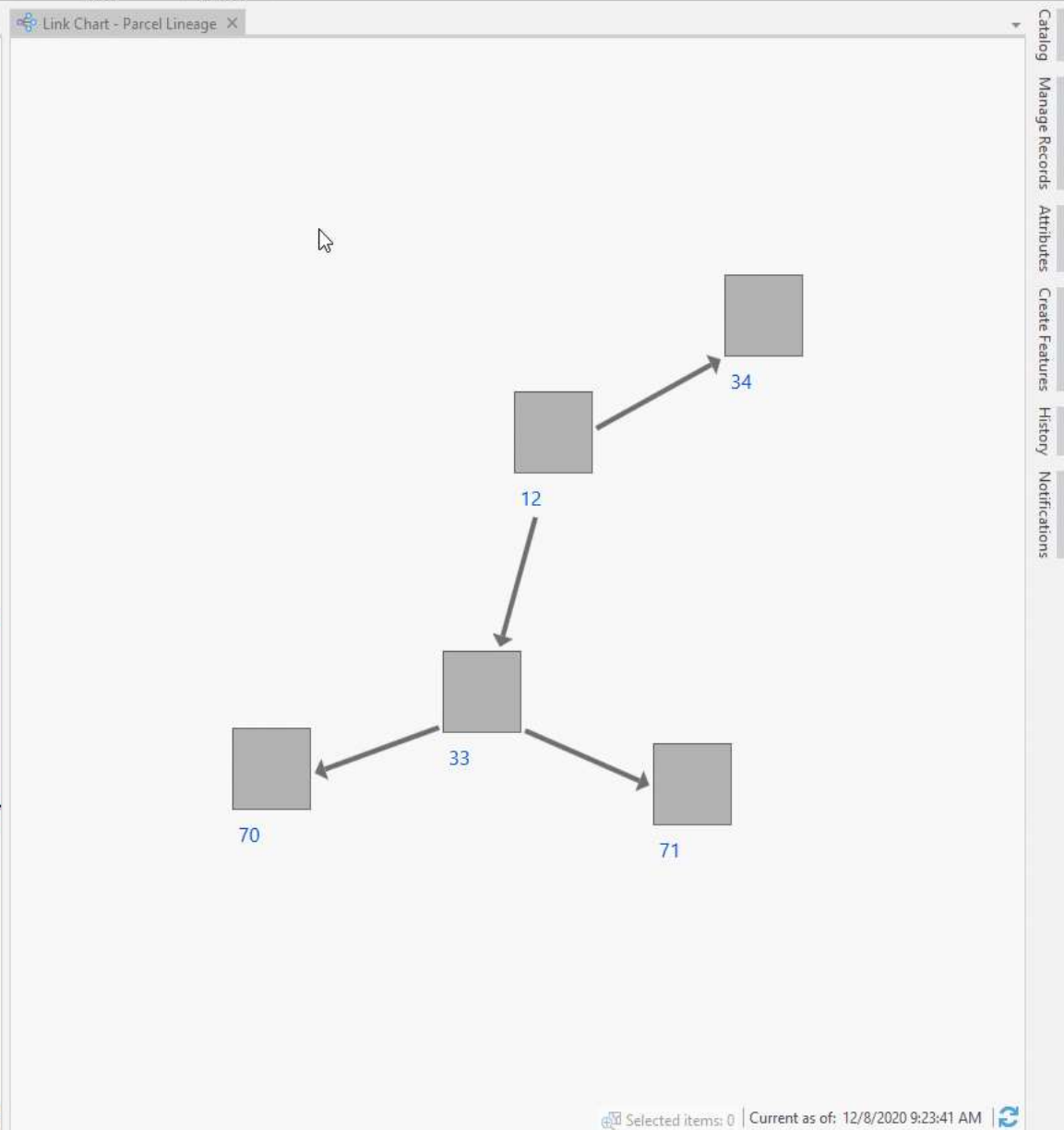
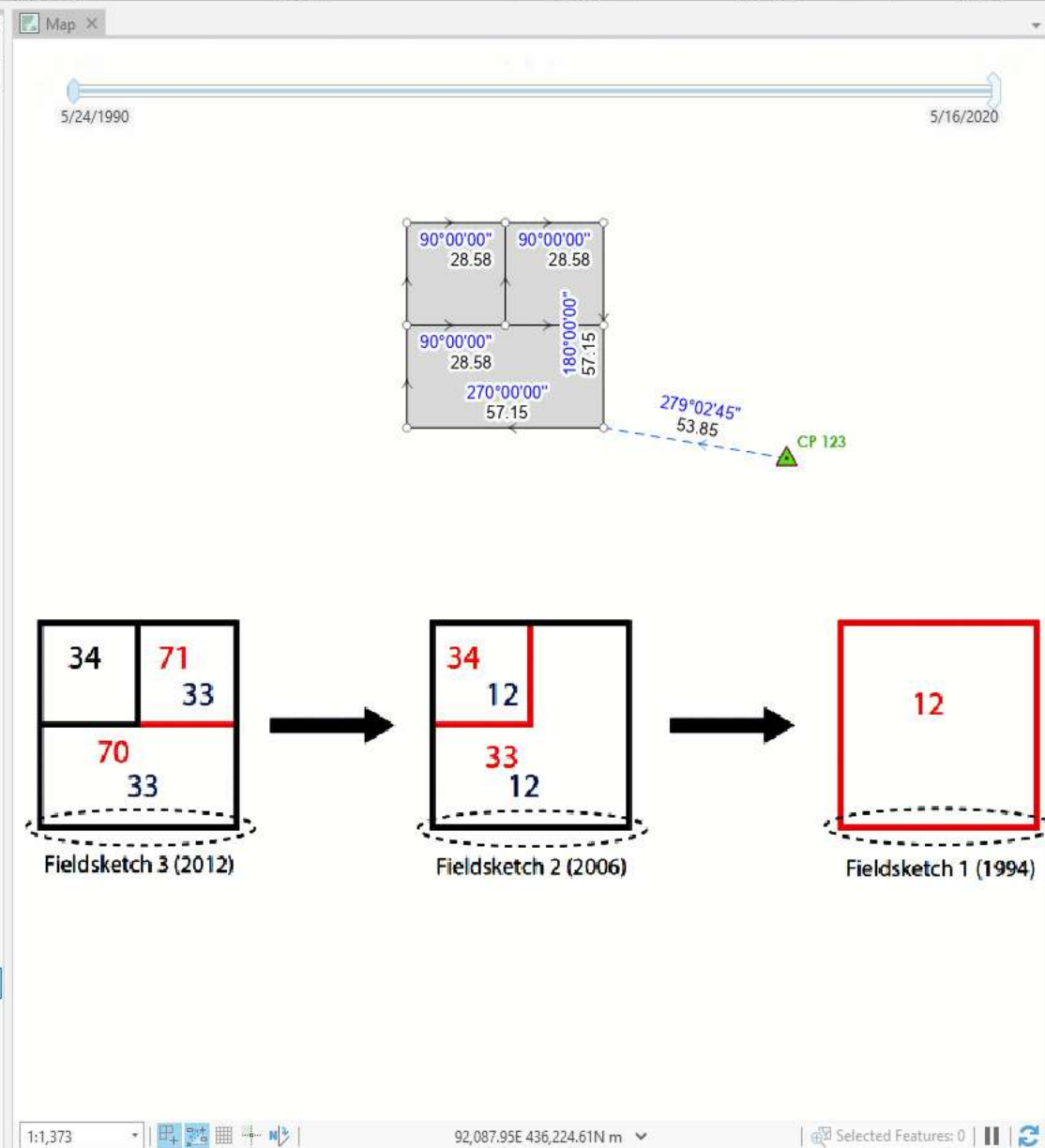
Link Analysis | Export Link Chart | Export

Contents

Search

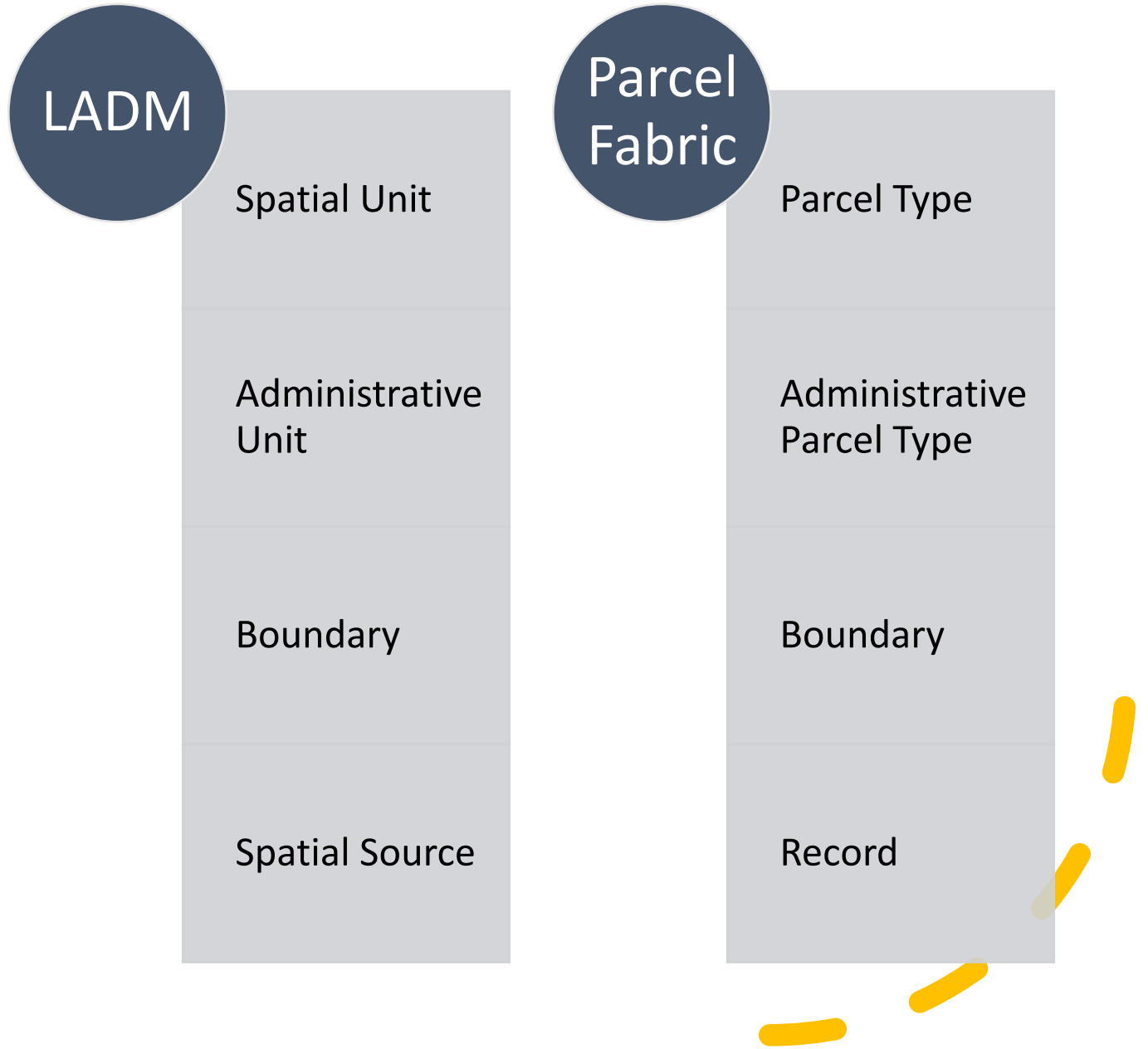
Drawing Order

- Map
  - ParcelFabric
  - Points
    - Constrained
      - Point
      - Retired Point
      - <all other values>
  - All Parcels
  - Connection Lines
  - Parcels
    - Historic
      - Historic Parcels\_Lines
      - Historic Parcels
    - Parcels\_Lines
    - Parcels
  - FieldSketches.png
    - RGB
      - Red: Band\_1
      - Green: Band\_2
      - Blue: Band\_3
    - PhaseABC.png
    - World Topographic Map
    - World Hillshade
  - Link Charts
    - Link Chart - Parcel Lineage
      - Entities
        - Parcel
      - Relationships
        - Parent to Child



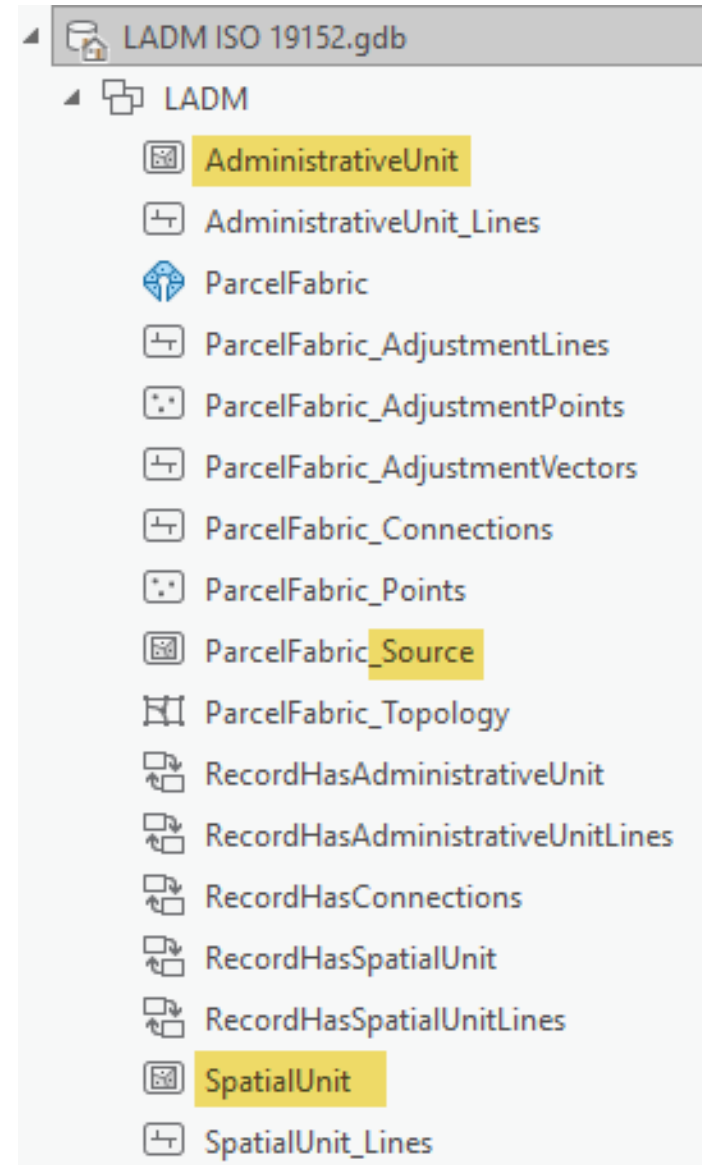
# LADM Ontology in Parcel Fabric

Supports Any  
Language



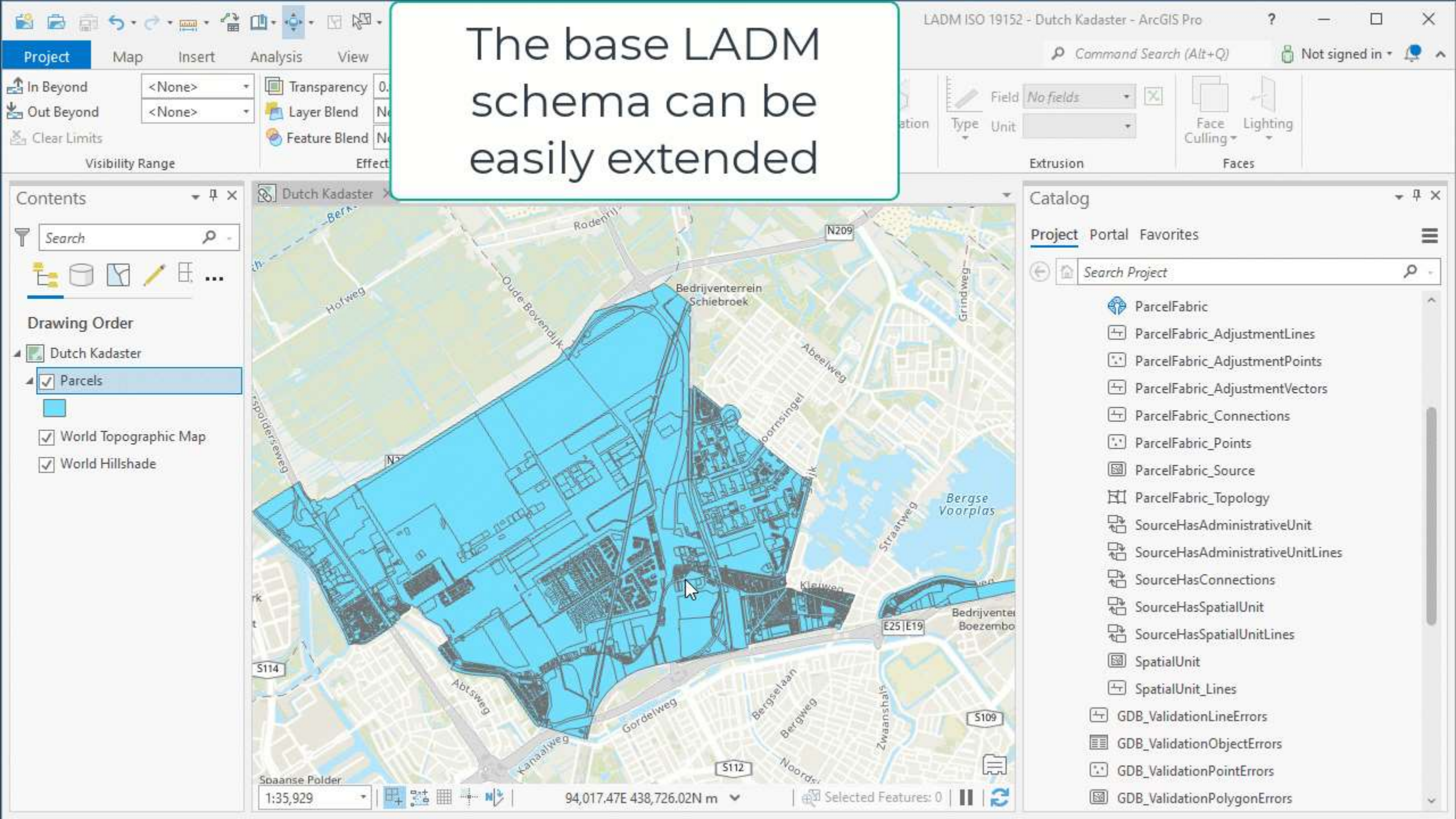
# LADM in Parcel Fabric: Ready to Use

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The base LADM schema can be easily extended





# Parcel Fabric Conforms to LADM

Both LADM and the PF models are:

- Flexible and extendable ('profiles')
- Object oriented
- Relationships between entities
- Account for the physical representation and the legal representation.
- Agnostic to the type of legal descriptions, support formal and informal tenure systems



# Extending the Parcel Fabric Data Model

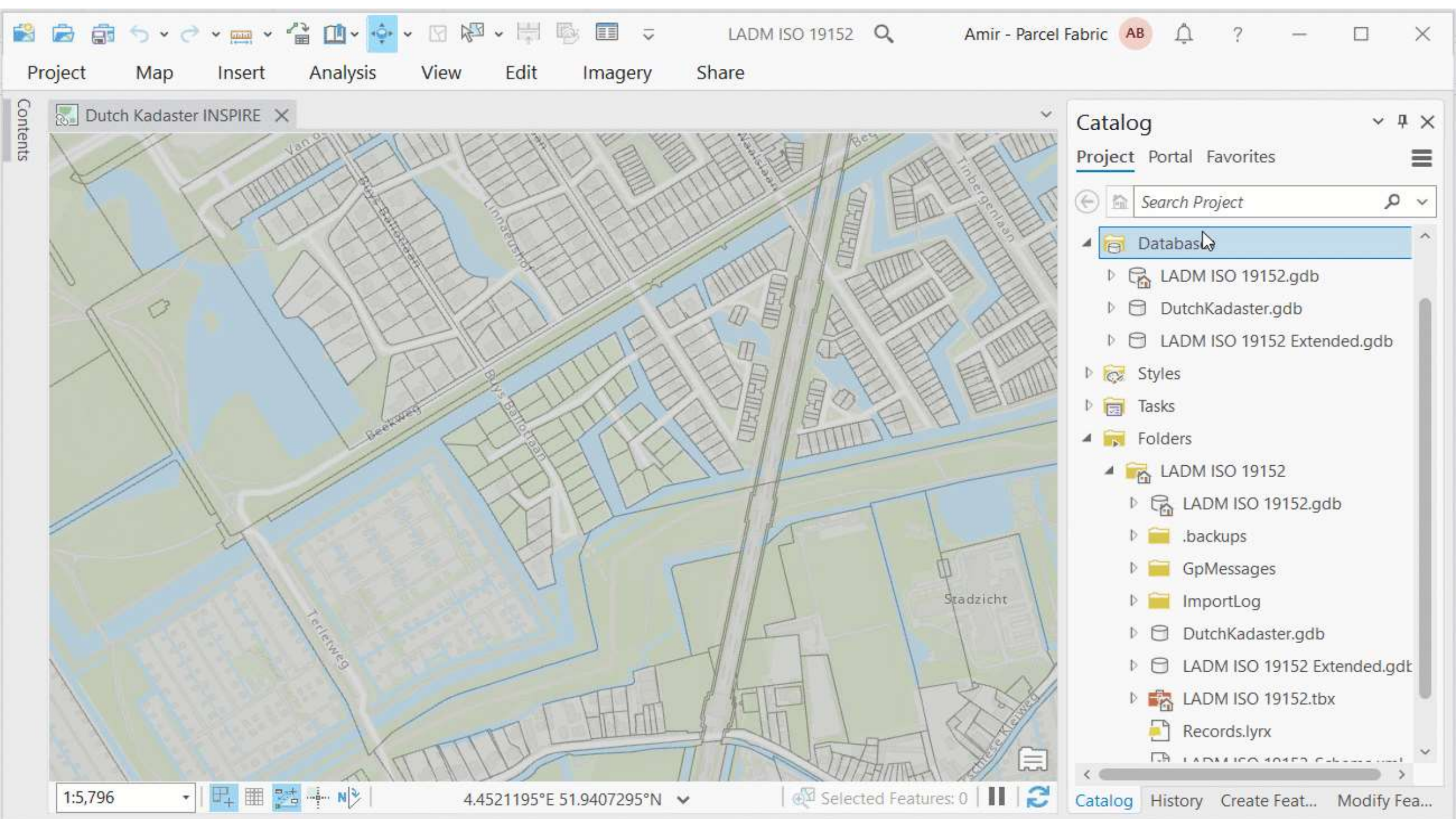
## To Extend, One Can Add:

- Additional fields as needed
- Domains (AKA 'value list') to certain fields
- Configure topology rules
- Configure attribute rules

## Or Additionally:

- Enable versioning to allow multi-user editing
- Enable replica, editor tracking





Contents

Dutch Kadaster INSPIRE



### Catalog

Project Portal Favorites

Search Project

- Databases
  - LADM ISO 19152.gdb
  - DutchKadaster.gdb
  - LADM ISO 19152 Extended.gdb
- Styles
- Tasks
- Folders
  - LADM ISO 19152
    - LADM ISO 19152.gdb
    - .backups
    - GpMessages
    - ImportLog
    - DutchKadaster.gdb
    - LADM ISO 19152 Extended.gdt
    - LADM ISO 19152.tbx
    - Records.lyrx
    - LADM ISO 19152 Catalog...



UUID (GlobalID) that guarantee uniqueness across replicas (connected and disconnected workflows).

Built-in Quality Rules as part of the schema

Built-in Workflows

Feature Level metadata

Feature Class metadata

Explicit parcel lineage

# Parcel Fabric Supports

# Colombia

## IGAC

Kadaster International  
Esri Colombia  
Trimble

- Post-Conflict Cadastre
- Sub-meter GNSS
- Standards-based - LADM
- Field Maps
- SaaS – ArcGIS Online
- Participatory
- Fit for Purpose



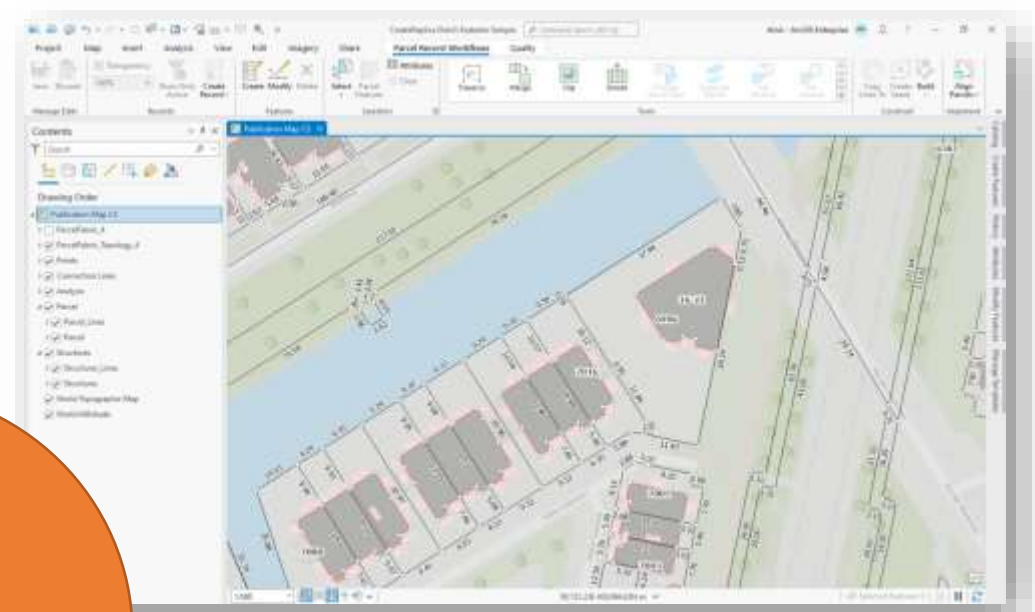
Mark Rutte, Prime Minister of the Kingdom of the Netherlands:

*"The Kadaster project is based on the Fit-For-Purpose methodology: fast, affordable and participatory."*



# Web Services

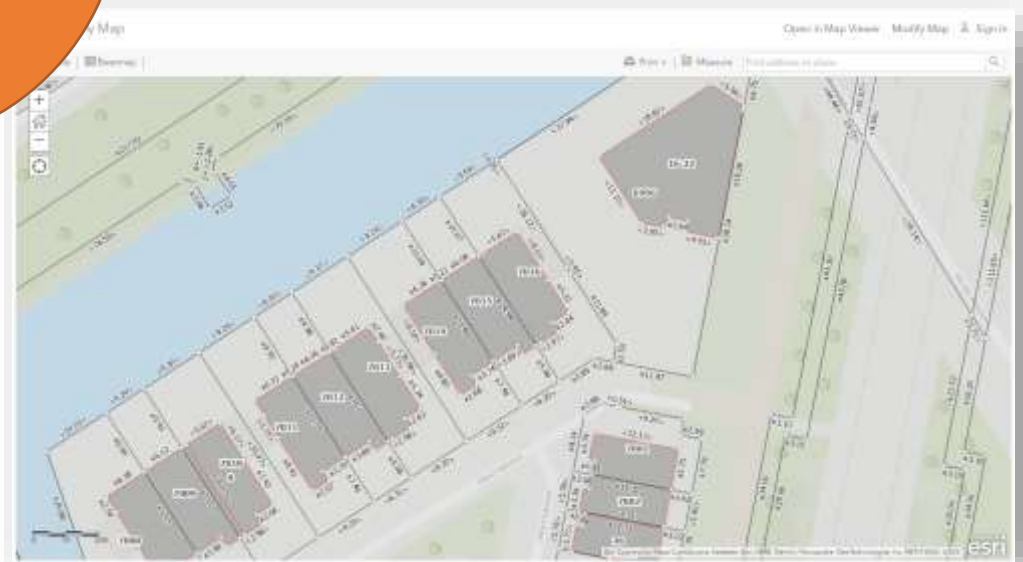
LADM



*Desktop*



*Mobile*



*Web App*



A screenshot of the Esri Community website showing the 'Land Administration Domain Model (LADM)' group page. The page features a red header with the group name, a search bar, and navigation links. The main content area includes a welcome message and a 'Group Information' section with a person icon. The breadcrumb trail reads 'Home > User Groups > Land Administration Domain Model (LADM)'.

esri Community All Communities ArcGIS Ideas Community Basics

# Land Administration Domain Model (LADM)

Search This group

Home > User Groups > Land Administration Domain Model (LADM) Options

## Welcome to the Land Administration Domain Model (LADM) Community

Welcome to the LADM community. This is an open forum for LADM subject matter experts or those just getting started to share their implementation stories, ask questions and collaborate. Please subscribe to keep up and contribute to the conversation.

### Group Information

# Join the LADM Community

A sidebar containing a 'Contents' section with links to 'Questions', 'Blog', and 'Documents', each with a count of 0. Below this is a 'Helpful Links' section with links to 'FIG Standards Network' and 'Parcel Fabric Community'.

### Contents

- Questions 0
- Blog 0
- Documents 0

### Helpful Links

- FIG Standards Network
- Parcel Fabric Community