

# National GeoPlatform – Object Editor

ISO Metadata Tools Session

May 23, 2017



# Topics

- What is the Object Editor?
- Why is it needed?
- What's new? A different approach...
- Use cases
- Demo of Object Editor
- Introduction to the GeoPlatform Profile for ISO-19115-3

# What is the Object Editor?

*A tool for “curating” Portfolios of Online Geospatial Resources...*

- Create and register portfolio objects (representations of resources):
  - Dataset
  - Service
  - Layer
  - Map
  - Organization
  - Contact
  - Concept (e.g., Keyword, Theme)
  - Concept Scheme (e.g., Thesaurus)
- Curate portfolio objects into linked collections (a web) of resources of interest
- Manage online resources as unique, consistent, and unambiguous objects
- Update / correct / augment information about objects. Specifically, elements essential for automated search and online access:
  - Identification
    - Citations
    - Responsible parties
    - Keywords/ topics/ themes
  - Distribution
    - Formats
    - Distributors
    - Digital transfers
    - Online resources
- A work-in-progress... with a roadmap for incremental rollout of new capabilities this year

# Why? So users can find what they need!

- **A-16 National Geospatial Data Assets (NGDA)**

- **177** datasets

- **Data.gov**

- **122,791** geospatial datasets

- **Data.gov CSW**

(<https://catalog.data.gov/csw-all?REQUEST=GetCapabilities&SERVICE=CSW>)

- **122,791** datasets and (and **32** services)

- **EPA Environmental Data Gateway (EDG)**

- **3,034** items

- **NOAA GEO-IDE UAF ERDDAP**

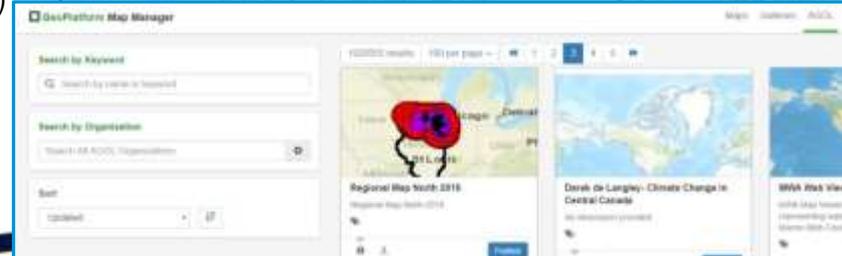
- **8,985** datasets

- **NOAA CSW**

(<https://data.noaa.gov/csw?REQUEST=GetCapabilities&SERVICE=CSW>)

- **45,654** datasets (and **65** services)

- **ArcGIS Online** (**1,020,570** maps)

# Why?

## Connecting user-needs to data and services

*Finding and remembering the good stuff, forgetting the bad stuff...*

### (1) Describe Datasets and Services for Machine-Consumption

ISO Metadata according to FGDC Guidelines

- ✓ Identification
- ✓ Distribution

### (2) Ground to Semantic Concepts (from Taxonomies)

Taxonomies (Controlled Vocabularies)

- ✓ Well defined meaning of terms (concepts)
- ✓ Unambiguous
- ✓ Unique

### (3) Link into Knowledge Graphs for Navigation and Reasoning

Unified Knowledge Graph

- ✓ 5★ Linked Data
- ✓ Machine-encoded facts
- ✓ Framework for reasoning and navigation

### (4) Advanced Search and Analysis

Advanced Search

- ✓ Navigate
- ✓ Discover
- ✓ Discern
- ✓ Recommend

With improved...

- Reliability
- Precision
- Performance
- QoS
- Consistency

(5) *Doing things with Maps, Layers, Services, and Datasets*

“Quickly find the right resource for my need”

“Let me build and share my Open Map”

“Let me add to my community gallery”

“How are my assets performing?”

# What's the Big Idea? *Linked Open Data (LOD)*

*Metcalf's Law... there's more valuable information when we link things together.*

- Data "on-the-Web" characterizes unlinked, hard to find, document-based data
- Data "in-the-Web" describes well-integrated, linked data providing value-added network effect benefits
- **Good news:** Geodata from US is generally...
  - Downloadable as files "on-the-Web"
  - Freely available under an open license
    - Data can be stored locally
    - Data can be used anyway you wish
    - Data can be shared with anyone
    - Data can be modified as you wish
- **Bad news:** still not good enough to find the right data at the right time...
  - To *automatically* get data *in-the-Web*, we need good identification and distribution metadata
- **Really good news!** *Basic metadata for Datasets and Services opens up the world of Linked Data, Knowledge Graphs and Advanced Search*

# Towards 5★ Open Data

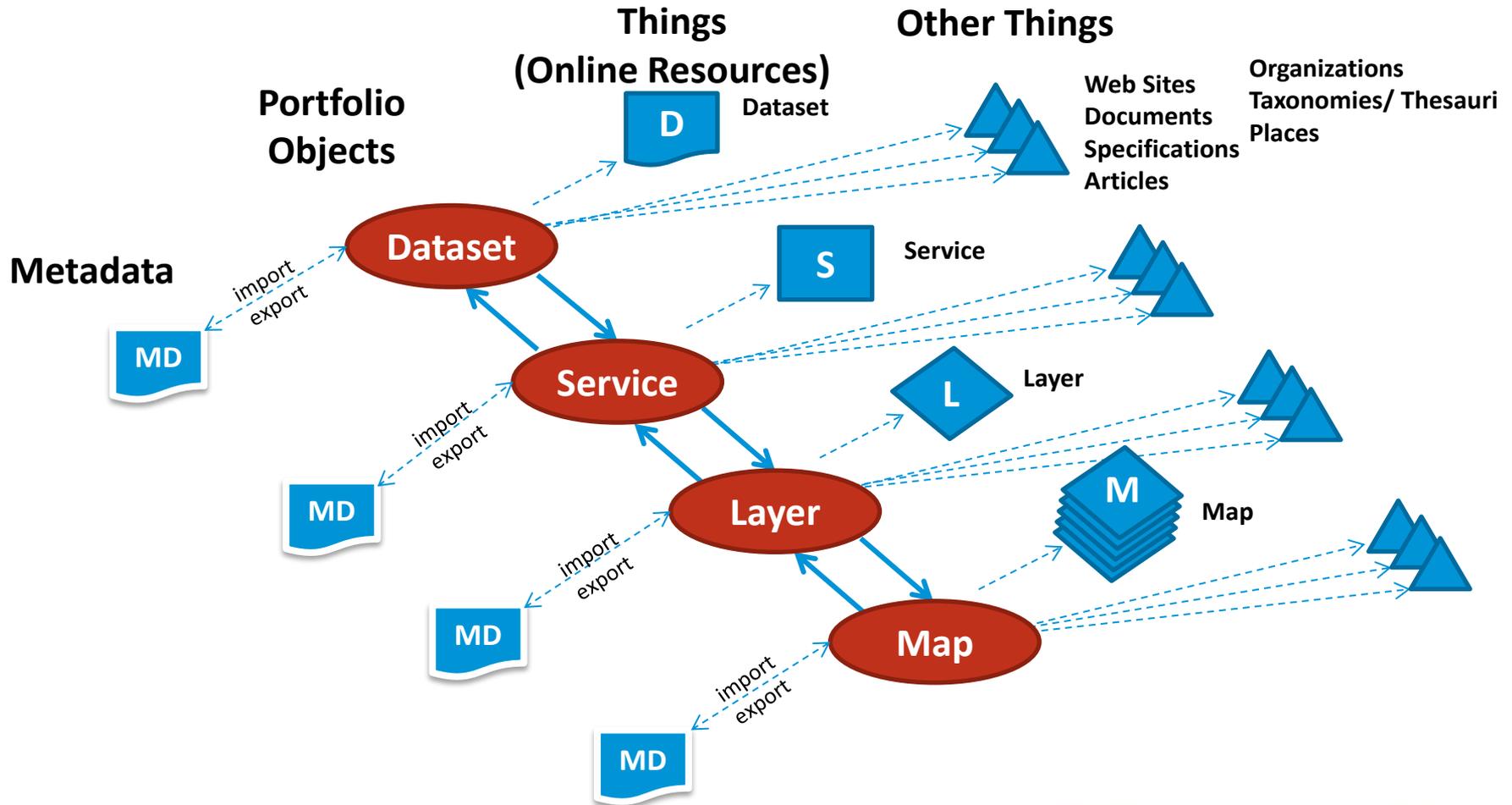
Towards a world of *unambiguous, semantically-grounded linked data* that adds rich context and meaning to shared data.... The last rung in the interoperability ladder.

Level of Openness	Description	Benefits
★	Make your stuff available on the Web (whatever format) under an open license	<u>OK</u> . It's great to have the data accessible on the Web under an open license (such as <a href="#">PDDL</a> , <a href="#">ODC-by</a> or <a href="#">CC0</a> ), however, the data is locked-up in a document. Other than writing a custom scraper, it's hard to get the data out of the document.
★★	Make it available as structured data (e.g., Excel instead of image scan of a table)	<u>Splendid!</u> The data is accessible on the Web in a structured way (that is, machine-readable), however, the data is still locked-up in a document. To get the data out of the document you depend on proprietary software.
★★★	<i>Use non-proprietary formats (e.g., CSV instead of Excel)</i>	<u>Excellent!</u> The data is not only available via the Web but now everyone can use the data easily. On the other hand, it's still data on the Web and not <a href="#">data in the Web</a> .
★★★★	<i>Use URIs to denote things, so that people can point at your stuff</i>	<u>Wonderful!</u> Now it's data in the Web. The (most important) data items have a URI and can be shared on the Web. A native way to represent the data is using RDF, however other formats such as Atom can be converted/mapped, if required.
★★★★★	<i>Link your data to other data to provide context</i>	<u>Brilliant!</u> Now it's data, in the Web <b>linked to</b> other data. Both the consumer and the publisher benefit from the <a href="#">network effect</a> .

[Tim Berners-Lee](#), the inventor of the Web and Linked Data initiator, suggested this [5 star deployment scheme](#) for Open Data

# GeoPlatform.gov: Objects and Internet Things

*Creating Curated Portfolios of Objects...*





# ISO-19115 GeoPlatform Profile (Summary)

- Primarily concerned with properly supporting the semantic web and enabling autonomous (machine-machine) access to services
  - mapping relationships between Datasets, Services, Layers, and Maps by...
  - ensuring they have clear and concise identification and location information
  - Support Linked Open Data standards
- Uniform Resource Identifiers (URIs) are used to ensure each resource has a unique and persistent identifier (as required for LOD)
- Open Layer and Open Map identification classes are added at the same level as Dataset and Service identification so they can be linked in metadata for exchange
- Formal semantics are added via Knowledge Graphs that wrap each resource
  - Make use of controlled vocabularies so that all key concepts are unambiguous

Draft spec and schema online here: <https://www.geoplatform.gov/gp-profile>

# ISO-19115 GeoPlatform Profile (Specifics)

Concerned with properly supporting the semantic web and autonomous (machine-machine) access to services...

- Added **identifier** elements to the MD\_Identification class and the CI\_Party class, **ontologyURI** element to MD\_FeatureTypeInfo, and a **uri** element to the CI\_Citation class. (*unambiguously ID things*)
- The element **serviceDocumentation** of type CI\_OnlineResource has been added to the class SV\_ServiceIdentification (*a non-standard, self-describing service... e.g., a swagger document*)
- The elements **format**, **representationTechnique**, and **mimeType** have been added to the CI\_OnlineResource data type to allow better description of online resources (*more machine-consumable*)
- SV\_ServiceIdentification **operatesOn** domain is modified to allow any specified class of MD\_Identification (*Services operate on Maps and Layers too, not just Datasets*)
- Introduces a new element of the MD\_Keywords class, **concept**, which is defined by a new class, MD\_Concept with the following elements and attributes: **conceptIdentifier**, **preferredLabel**, **alternateLabel**, and **description** (*more general-purpose than tags/keywords/themes/places/etc*)
- When **concept** is used, **keyword** should be used to refer to the preferredLabel of a SKOS Concept, MD\_Keywords: **type** should refer to the concept type, and MD\_KeywordClass: **ontology** should be used for concept scheme (*so we can link keywords to grounded SKOS concepts and ontologies*)
- To enable better semantic search, the attribute **type** should use the appropriate code in the KeywordTypeCodes code list and thus, five new KeywordTypeCodes have been added: **audience**, **subject**, **community**, **function**, and **domain** (*more ways to link to grounded concepts for “tradecraft”*)

# Introducing Object Editor

*Is used to support these functions...*

- Import ISO-19115 for Datasets and Services to create representations in GeoPlatform
- Fix and augment metadata about Dataset and Service objects
- Automatically harvest and link Service and Layer objects
- Export ISO-19115 for Datasets and Services (and, soon, Layers and Maps)

*It's not a...*

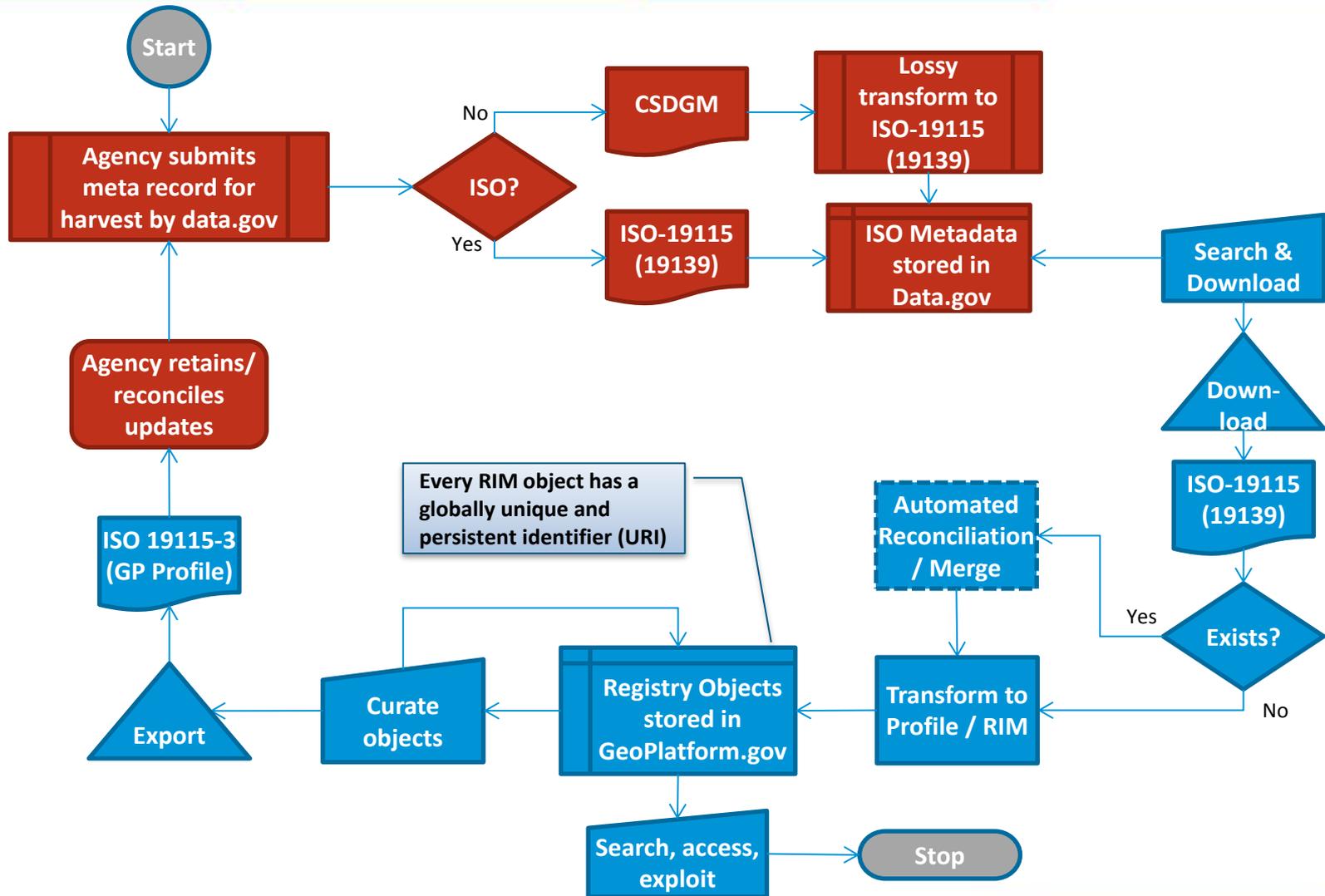
- A metadata editor
- A metadata validator
- A metadata viewer
- A tool for publishing metadata to external catalogs and portals (data.gov, CSW, CKAN, etc)

# Curating Objects with Object Editor

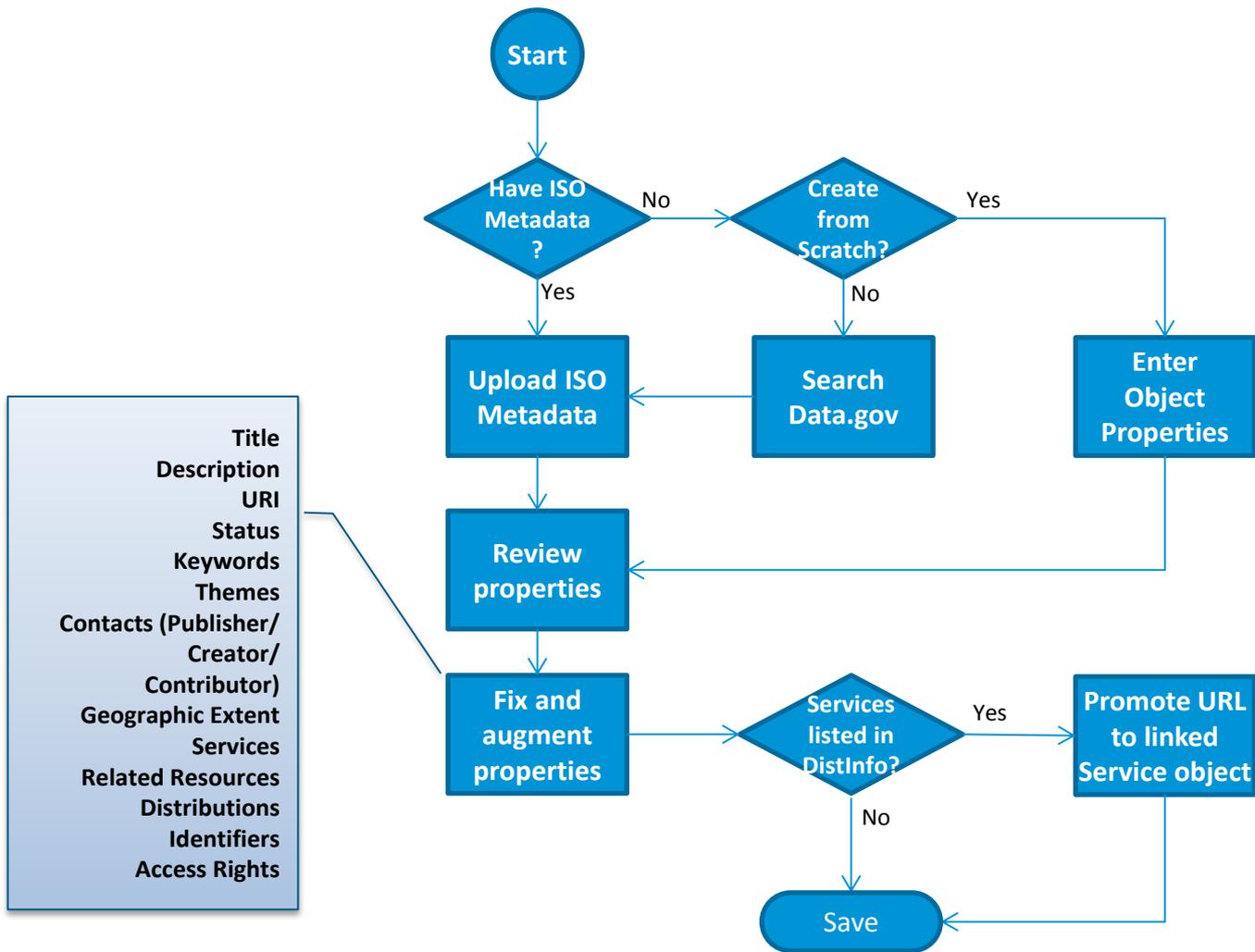
## *Managing the Portfolio of Geospatial Resources*

- 1. Register (publish) an Dataset object
  - Upload ISO 19115 metadata document
  - Search and import from data.gov
  - *Bulk harvest from data.gov CSW*
  - Create from scratch if needed
- 2. Update a Dataset object
  - Review identification (title, description, keywords, themes, extent) and distribution elements. Everything good?
  - Augment with additional information
  - Link to Services and other resources
  - Export ISO 19115 document
- 3. Register and update an Open Service object
  - Create from a known service endpoint (URL)
  - *Bulk harvest from online CSW catalogs*
  - Augment with additional identification information
- 4. Register and update an Open Layer object
  - Create from scratch
  - Harvest from a known service endpoint (URL)
  - Augment with identification information and links to Dataset and other resources

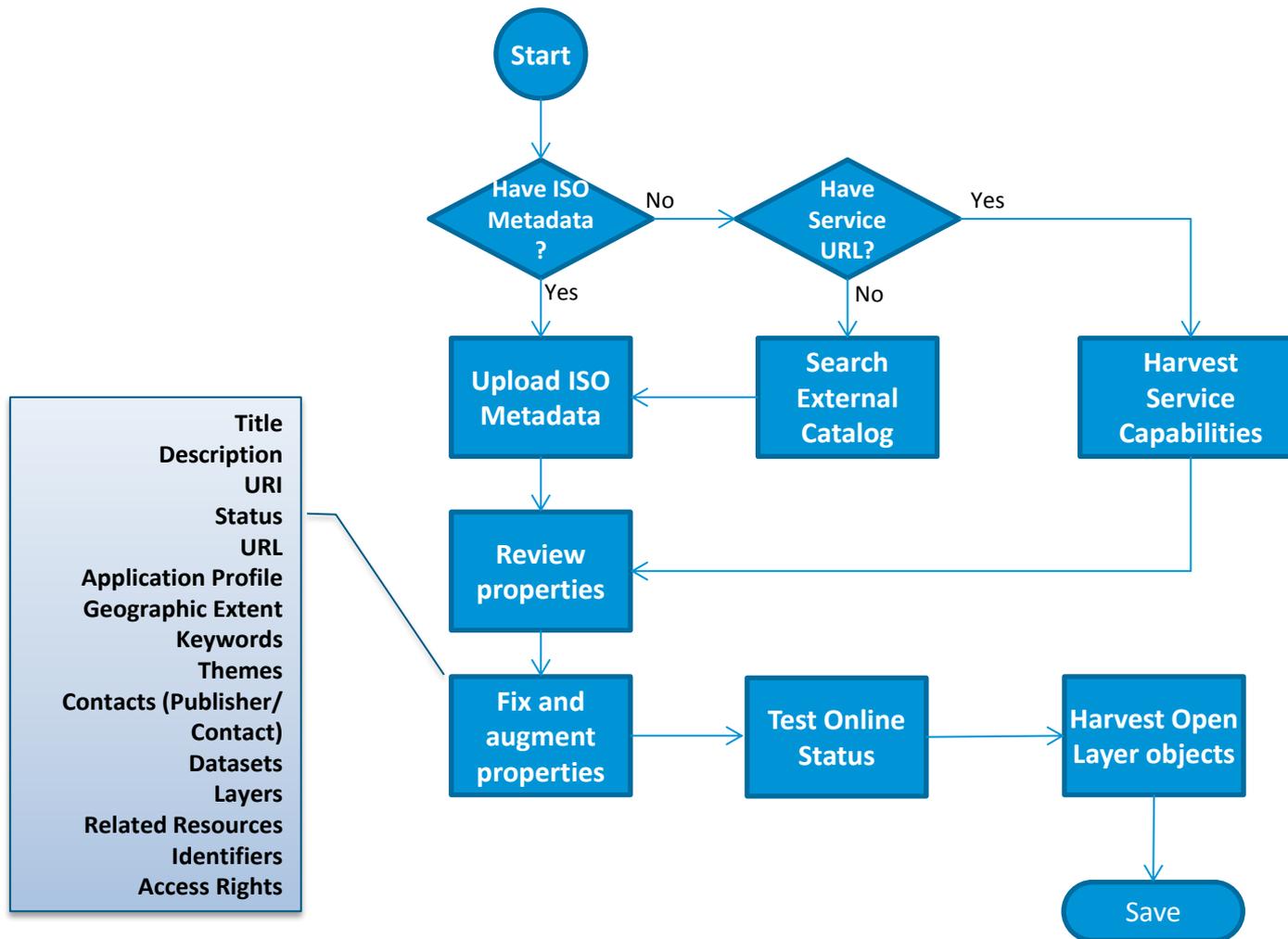
# The Metadata-Object Lifecycle



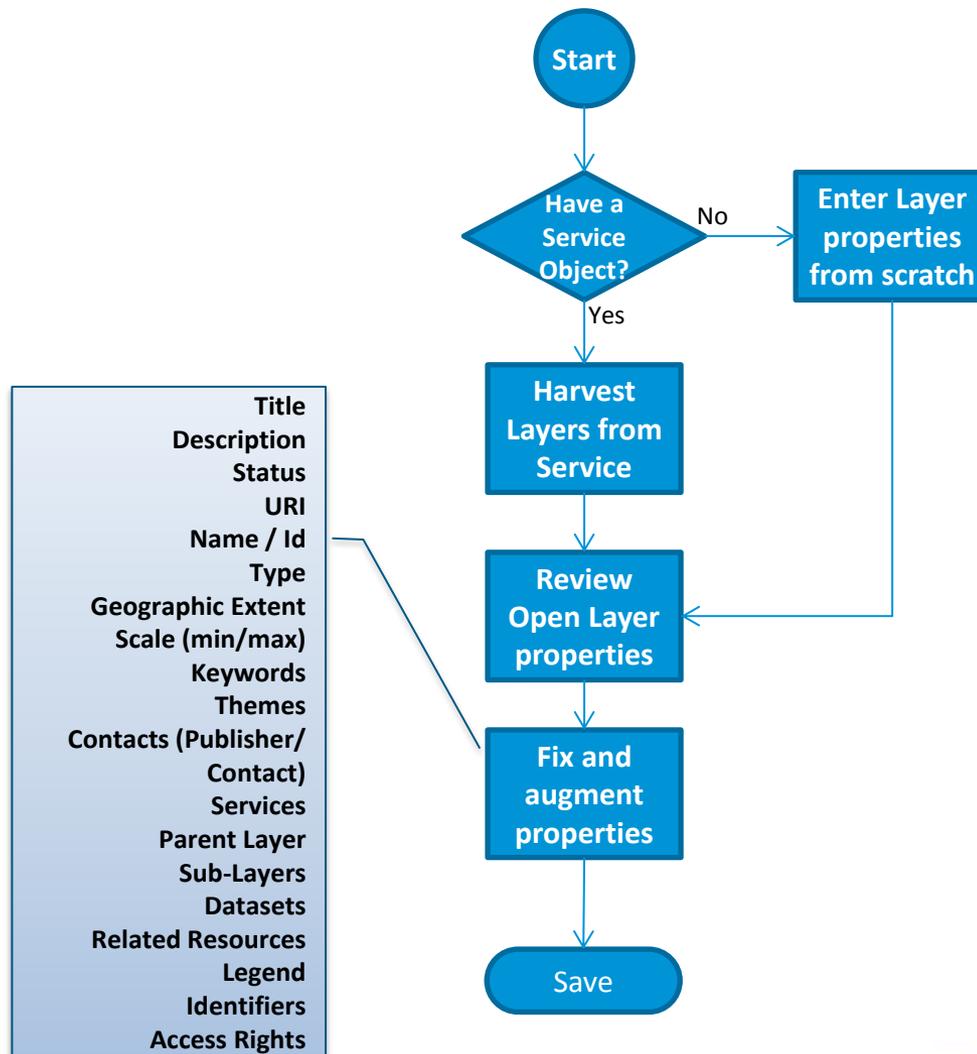
# Registering a Dataset Object



# Registering a Service Object



# Registering an Open Layer Object



# Object Editor Hands-on

**<https://uat-oe.geoplatform.us>**

**User: demouser**

**Pwd: DemoUser.01**

# Use ISO 19115 and MD\_DigitalTransferOptions in MD\_Distribution to link Service with Dataset

## <gmd:transferOptions>

<gmd:MD\_DigitalTransferOptions>

<gmd:onLine>

<gmd:CI\_OnlineResource>

### <gmd:linkage>

<gmd:URL> [https://tigerweb.geo.census.gov/arcgis/services/TIGERweb/tigerWMS\\_Current/MapServer/WmsServer](https://tigerweb.geo.census.gov/arcgis/services/TIGERweb/tigerWMS_Current/MapServer/WmsServer)

</gmd:URL>

</gmd:linkage>

### <gmd:applicationProfile>

<gco:CharacterString>https://opengis.net/spec/wms</gco:CharacterString>

</gmd:applicationProfile>

### <gmd:name>

<gco:CharacterString>TIGERweb/tigerWMS\_Current (MapServer)</gco:CharacterString>

</gmd:name>

### <gmd:description>

<gco:CharacterString>This web mapping service contains the layer for Unified School Districts. Since this layer displays at scales of 1:4,622,324 or greater, adjusting the BBox coordinates in the URL is necessary </gco:CharacterString>

</gmd:description>

### <gmd:function>

<gmd:CI\_OnlineFunctionCode

codeList="https://www.isotc211.org/2005/resources/Codelist/gmxCodellists.xml#CI\_OnlineFunctionCode"

codeListValue="download">download </gmd:CI\_OnlineFunctionCode>

</gmd:function>

</gmd:CI\_OnlineResource>

</gmd:onLine>

</gmd:MD\_DigitalTransferOptions>

</gmd:transferOptions>



# Questions?

# Thank You!

For more information, click [here!](#)

Contact Info

