



# Implementation of the NM Water Data Initiative

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# Water Data Act (NMSA 1978, § 72-4B)

- Enacted in 2019, from House Bill 651
- NM agencies will **share**, **integrate**, and **manage** our water data
  - Bureau of Geology & Mineral Resources (convener)
  - Interstate Stream Commission
  - Office of State Engineer
  - Environment Department
  - Energy, Minerals & Natural Resources

Let's make finding water data SIMPLE.



# Growing support and building connections

- Legislative annual funding \$110,000 at NM Tech / NMBGMR
- Philanthropic contributions of \$25,000 from Healy Foundation
- NM becomes a Pilot with Internet of Water project at Duke University
- **New!** Leveraging state funding for additional \$300,000 in federal funds under new US BOR WaterSMART grant (data project in Lower Pecos River region)



# Recently completed: Plan for Implementation

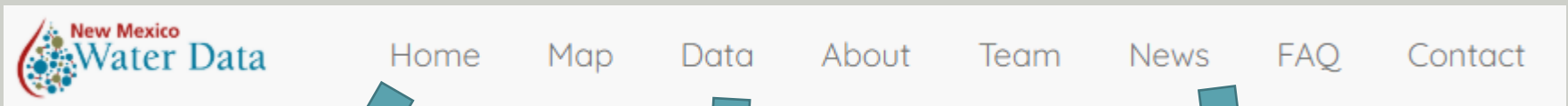


## GOALS

1. Provide IT support to improve data sharing
2. Develop robust IT and data infrastructure plan
3. Refine data standards
4. Continue stakeholder engagement opportunities

# NEWMEXICOWATERDATA.ORG

- Inventory of data and information sources now linked online
- Launched initial Water Data Service – CKAN as our data catalog



81 datasets found

Order by: Relevance

NMSU Water Resources Research Institute Statewide Water Assessment  
WRRRI's Statewide Water Assessment is an effort that will complement existing state agency water resource assessments. It will provide new, dynamic (updated frequently)...  
[HTML](#)

USDA NRCS Historical Monthly Snowpack Data  
Monthly snowpack data for all SNOTEL and SNOW network stations in the state of New Mexico from 1950 to the present for the Natural Resources Conservation Service...  
[CSV](#) [XLSX](#)

USDA NRCS Precipitation Data  
New Mexico current and historic precipitation data, plus snow and weather forecasts...  
[HTML](#)

News

Check in here for news, updates, reports and other links!

- Water data Update for January 1, 2020
- Water Data Workshop: Full Summary
- Water Data Workshop: Short Summary Graphic

Re-construction underway

Example website: <https://www.vvg.org.au/>

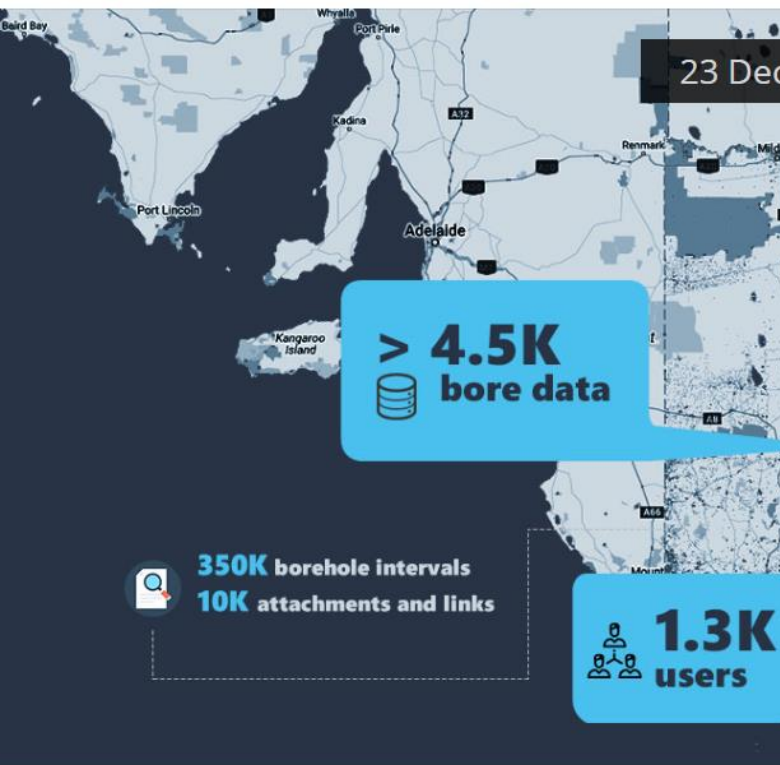


Data ▾

Maps ▾

Research ▾

News and updates ▾



## About the data



Web-portal currently displays data for all of Victoria

## Data catalogue



Download the raw data via our CKAN catalogue

## History of bore data



The first comprehensive groundwater bore database was assembled by the Geological Survey of Victoria (GSV) in the late 1960s

## Bore numbering



When electronic databases were introduced, the Parish-bore number was encoded into a 10-digit bore number that comprised

## Boring records



At the request of the VVG project, the State Library of Victoria (SLV) have digitised the records of Victorian Government drilling from 1879 to 1965...

## Glossary



Uncommon words found through out the site

# General plan for data sharing

1. Agencies collect, maintain and host data
  - Only share data when ready / QC'ed
  - Align with data standards as much as possible
2. Share data: Work with WDI support team to connect to cloud based CKAN
3. Integrate data: WDI support team help build transformations
3. Public access to data: Data available to build tools, analytics, or download and use through web interface



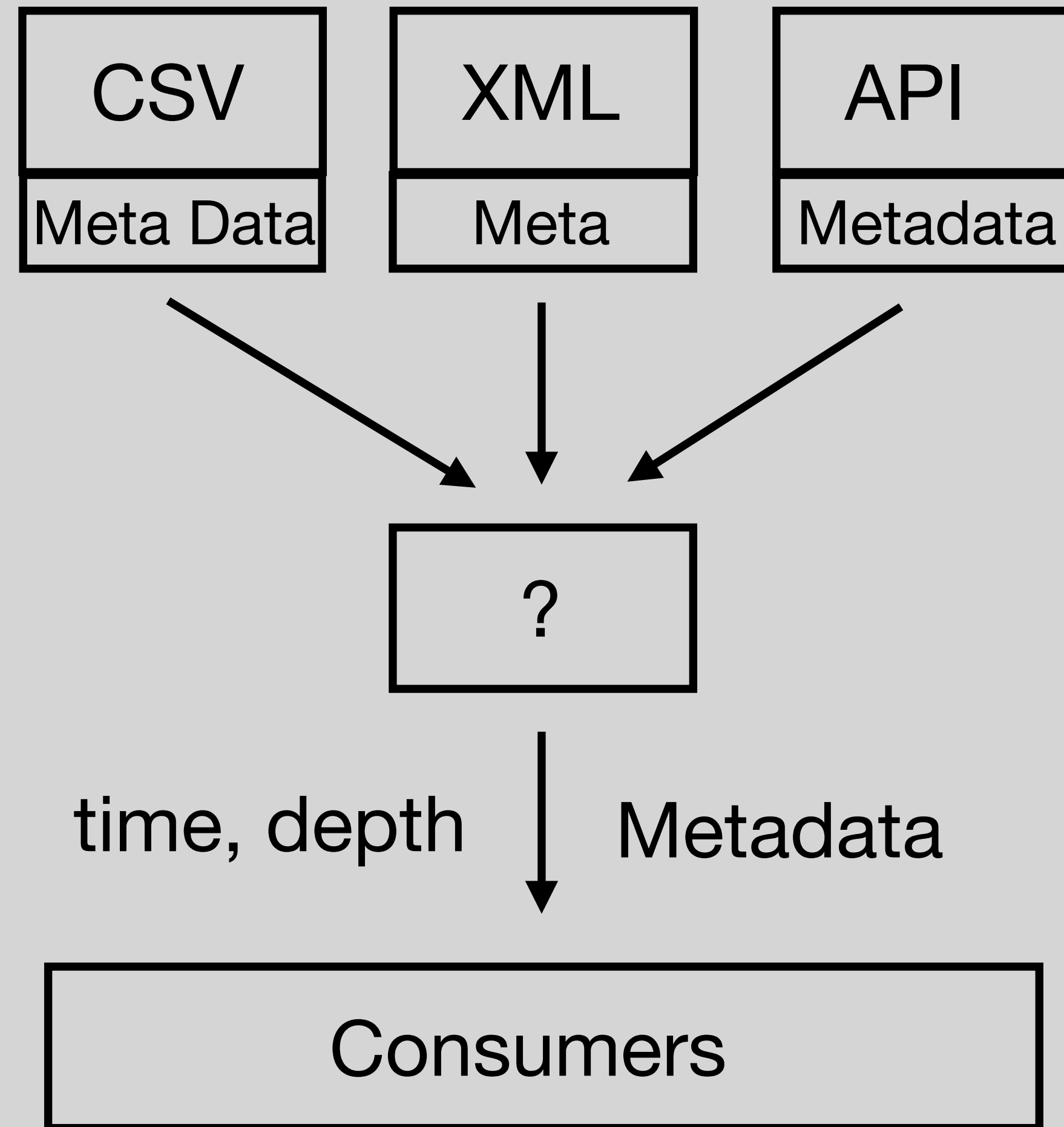
# **NM Water Data Pipeline**

**Water Data Workshop**

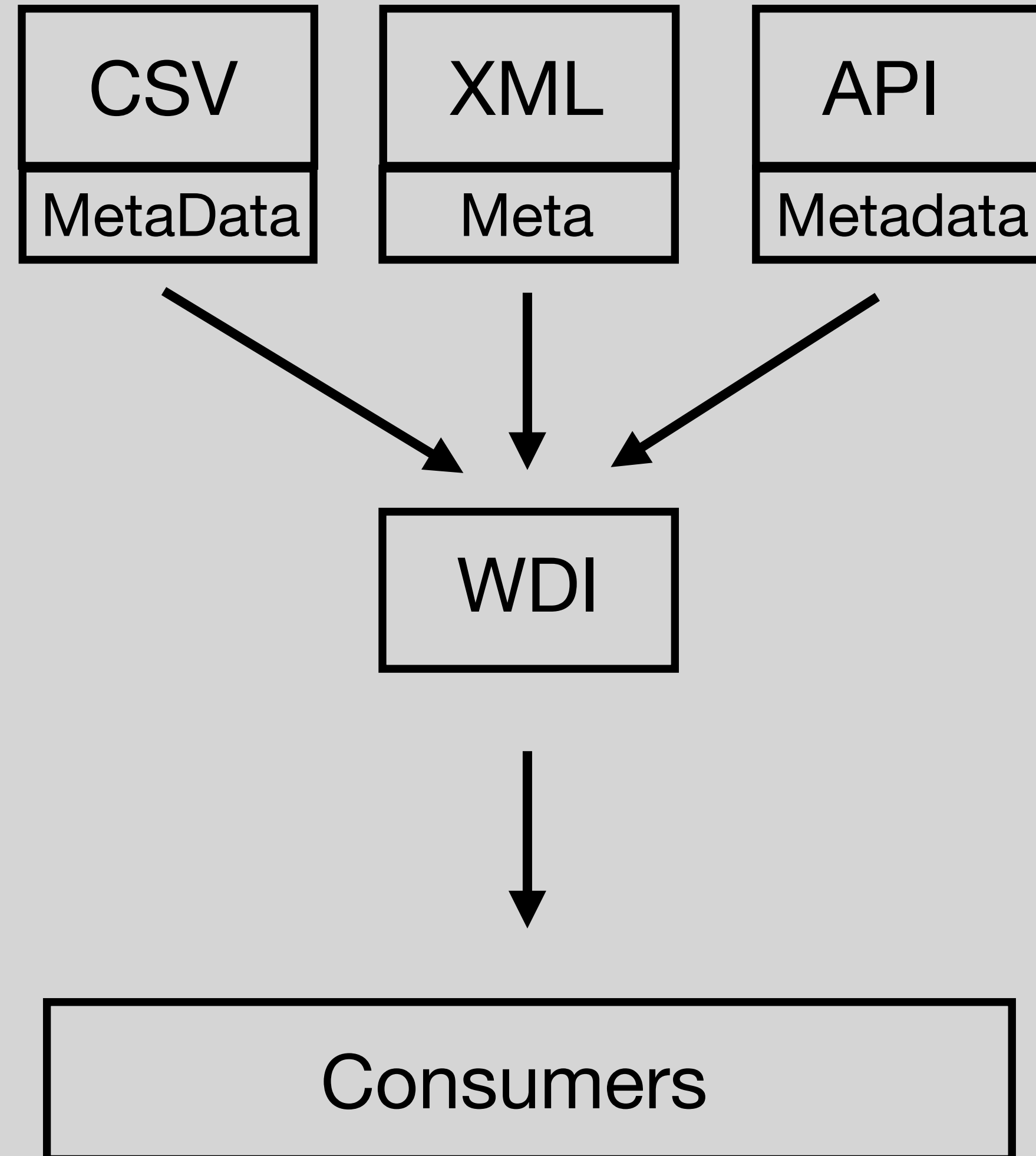
**Jake Ross 4/28/20**



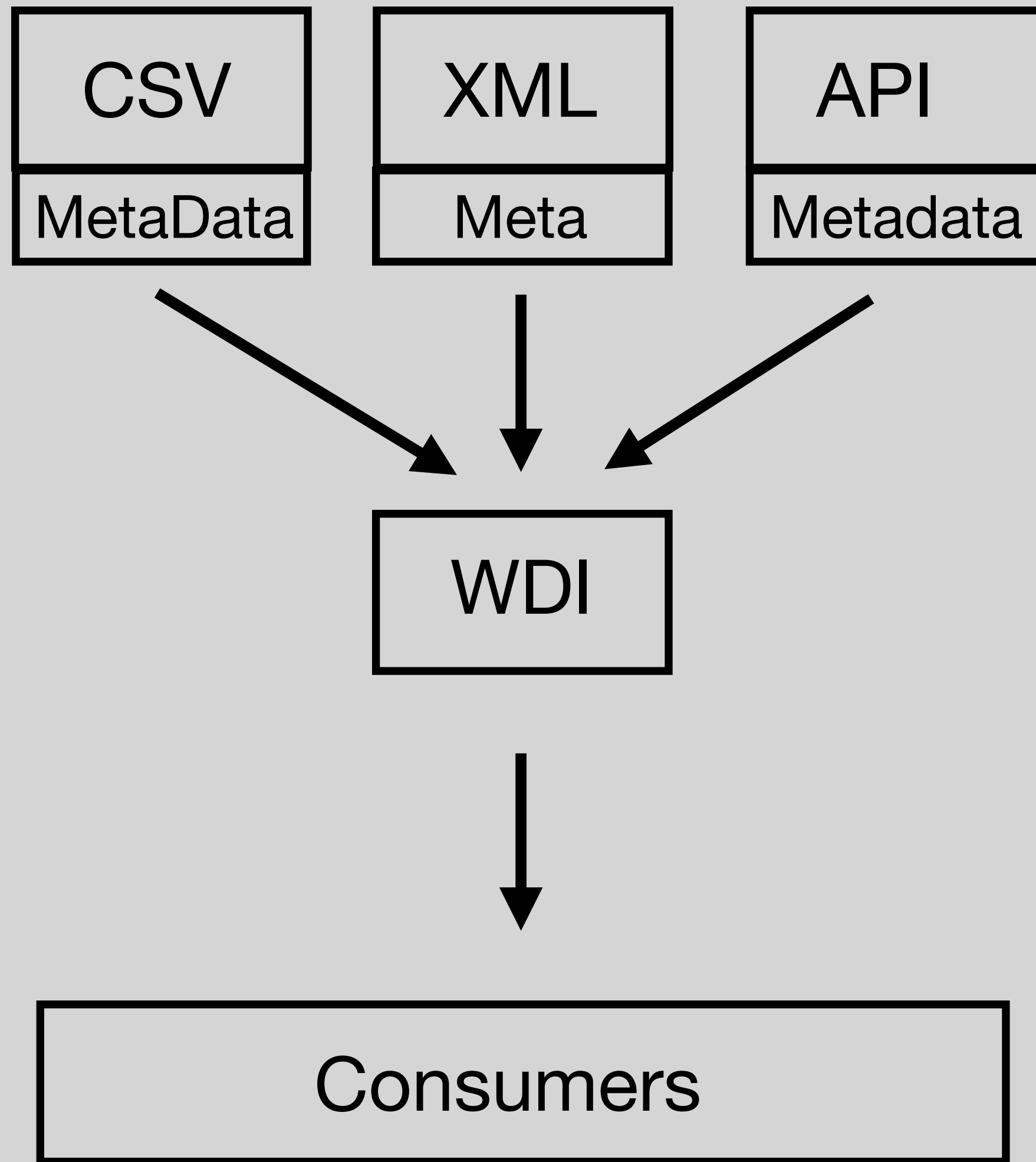
# The Problem



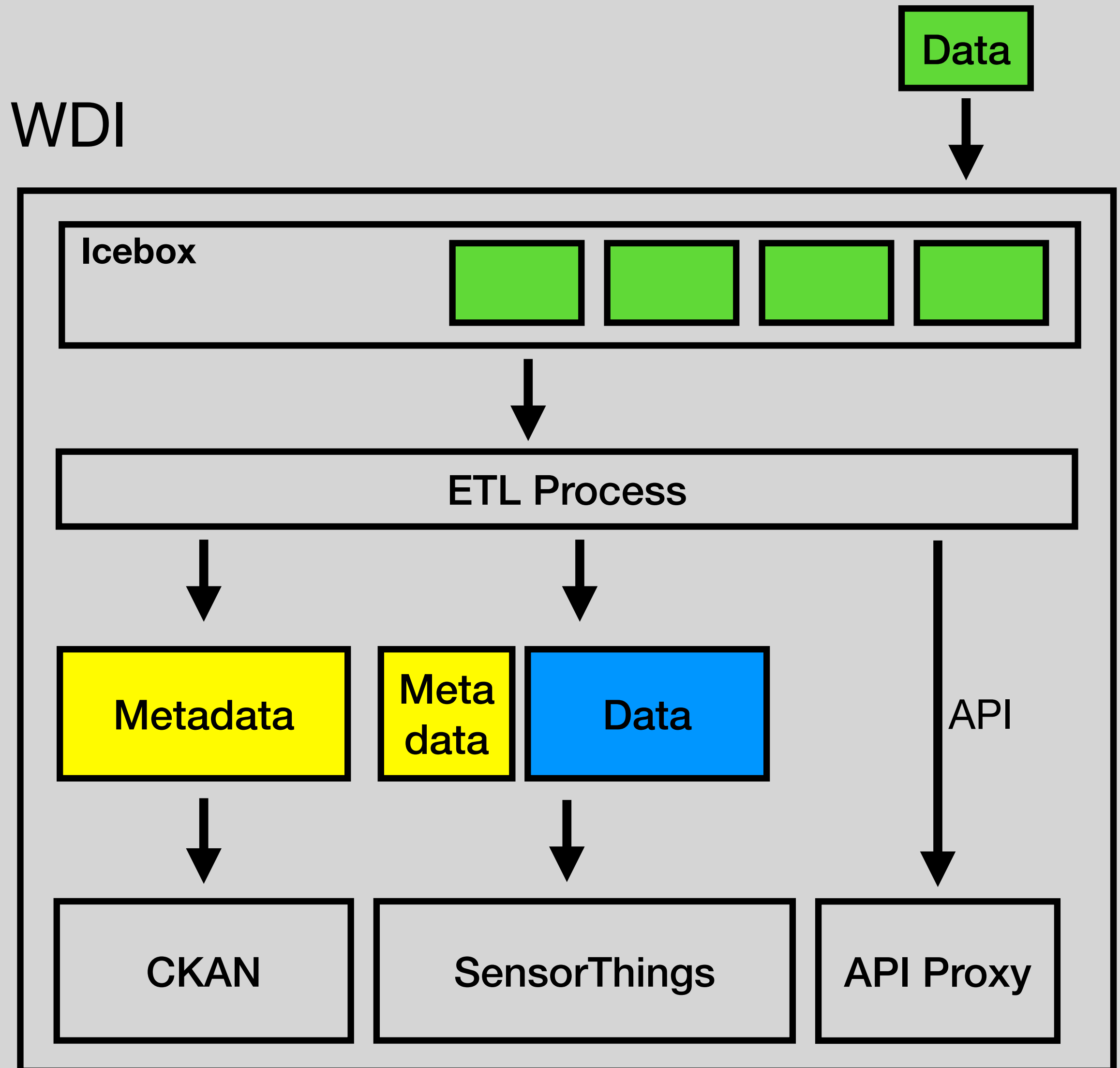
# A Solution



# A Solution

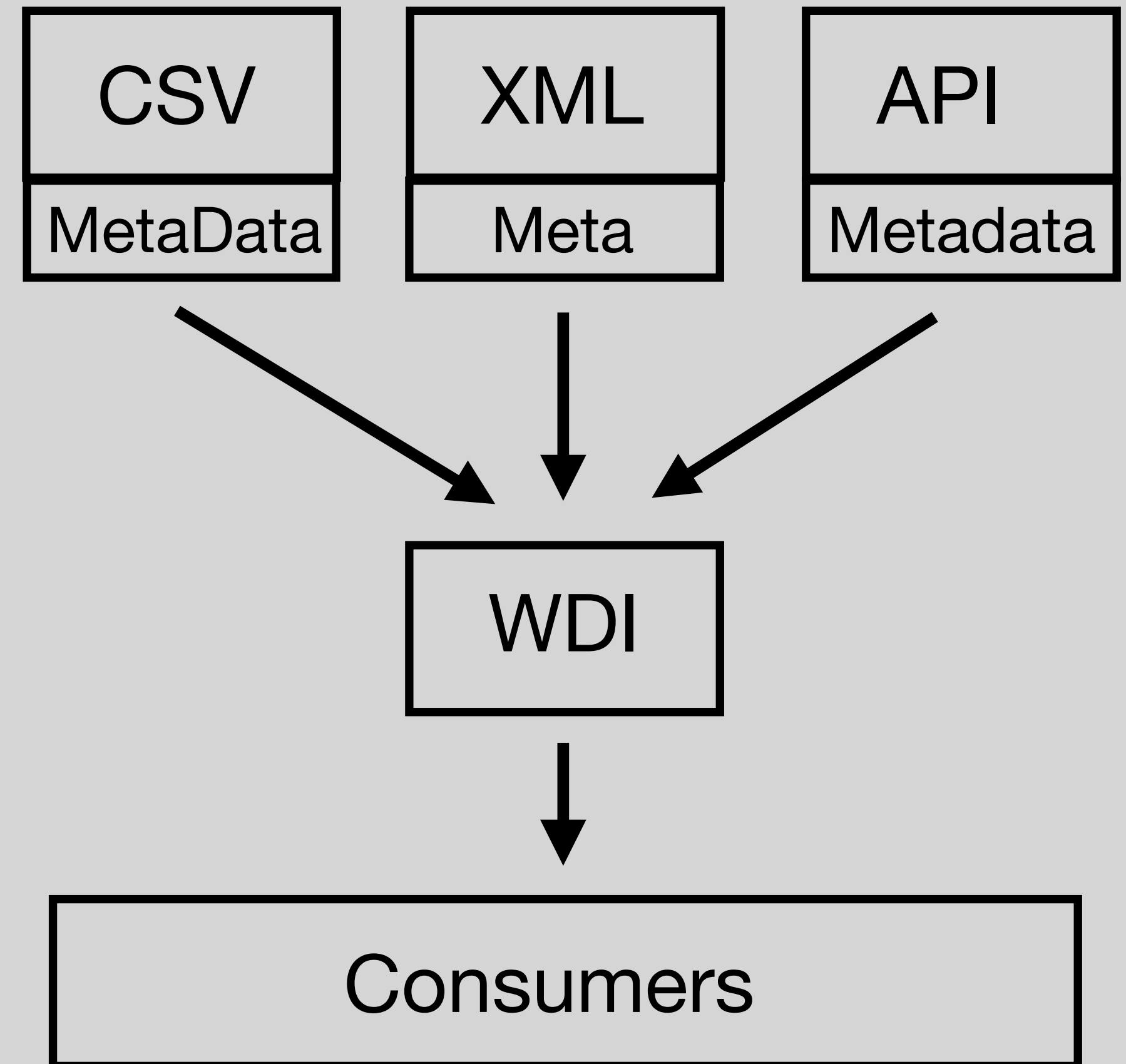


WDI



# Who are the “Consumers”

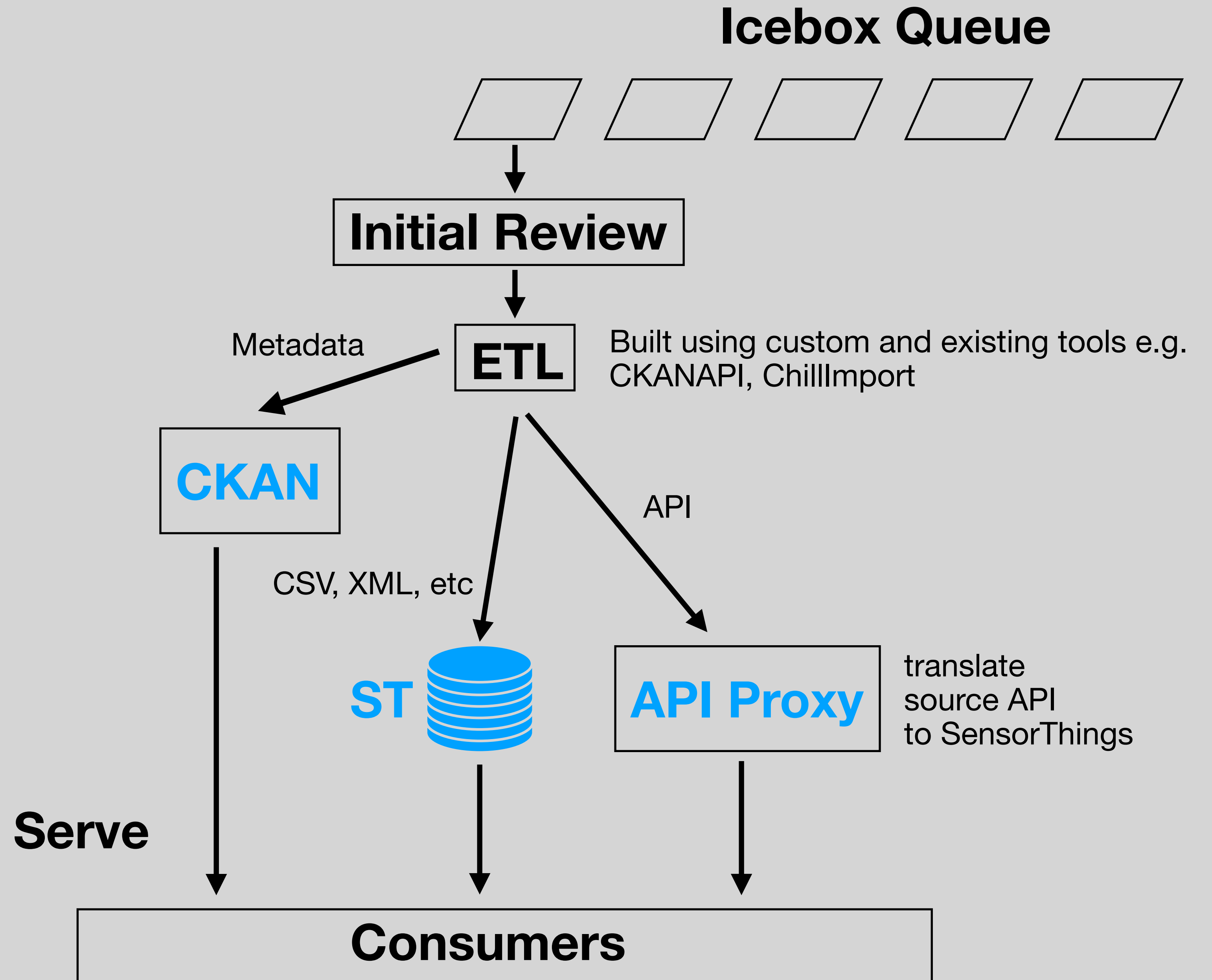
- Applications
  - Web applications, custom desktop apps
- Users
  - Scripts, Browser
- Other APIs
  - Integration with Regional and Federal services



# WDI Process

## Inside the Icebox

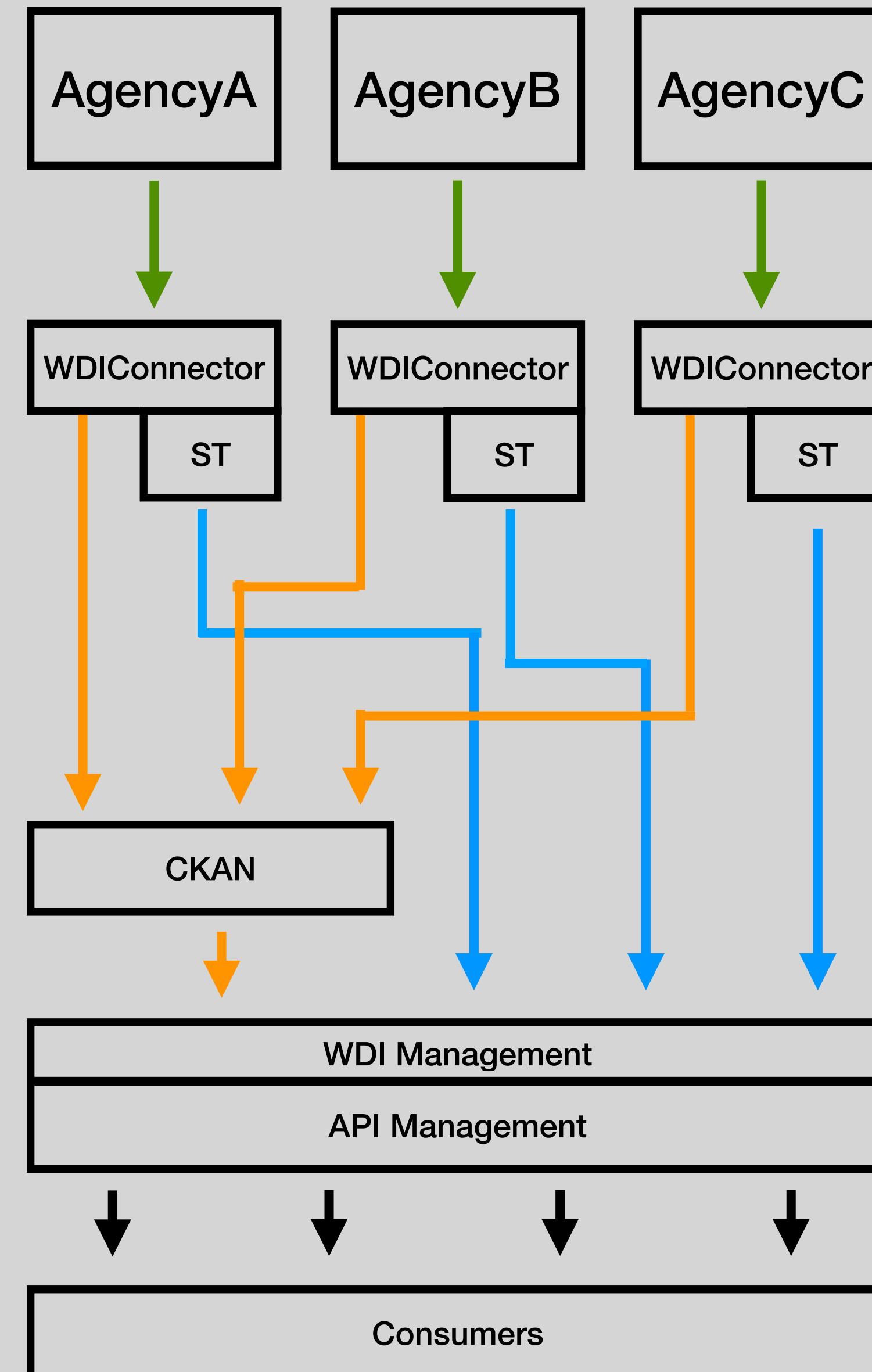
- **Initial Review**-  
compliant? complete?  
applicable? services?  
Manual and automated  
QC tools
- **ETL**
- **Serve** - **Services** provide  
data and metadata to  
users in an easily  
consumable standardized  
format



# Phase Two

## Move to a more federated system

- Adapt tools and procedures developed in Phase One
- Each agency has an WDIConnector
  - used to manage upload/ETL process
  - adds metadata to CKAN
  - adds data to a ST instance
- No need to use API proxying
  - Standardization happens at ETL stage
- Thin WDI management layer



Questions?

# The Problem and a solution

- Problem: Share water data and metadata efficiently to the public and researchers

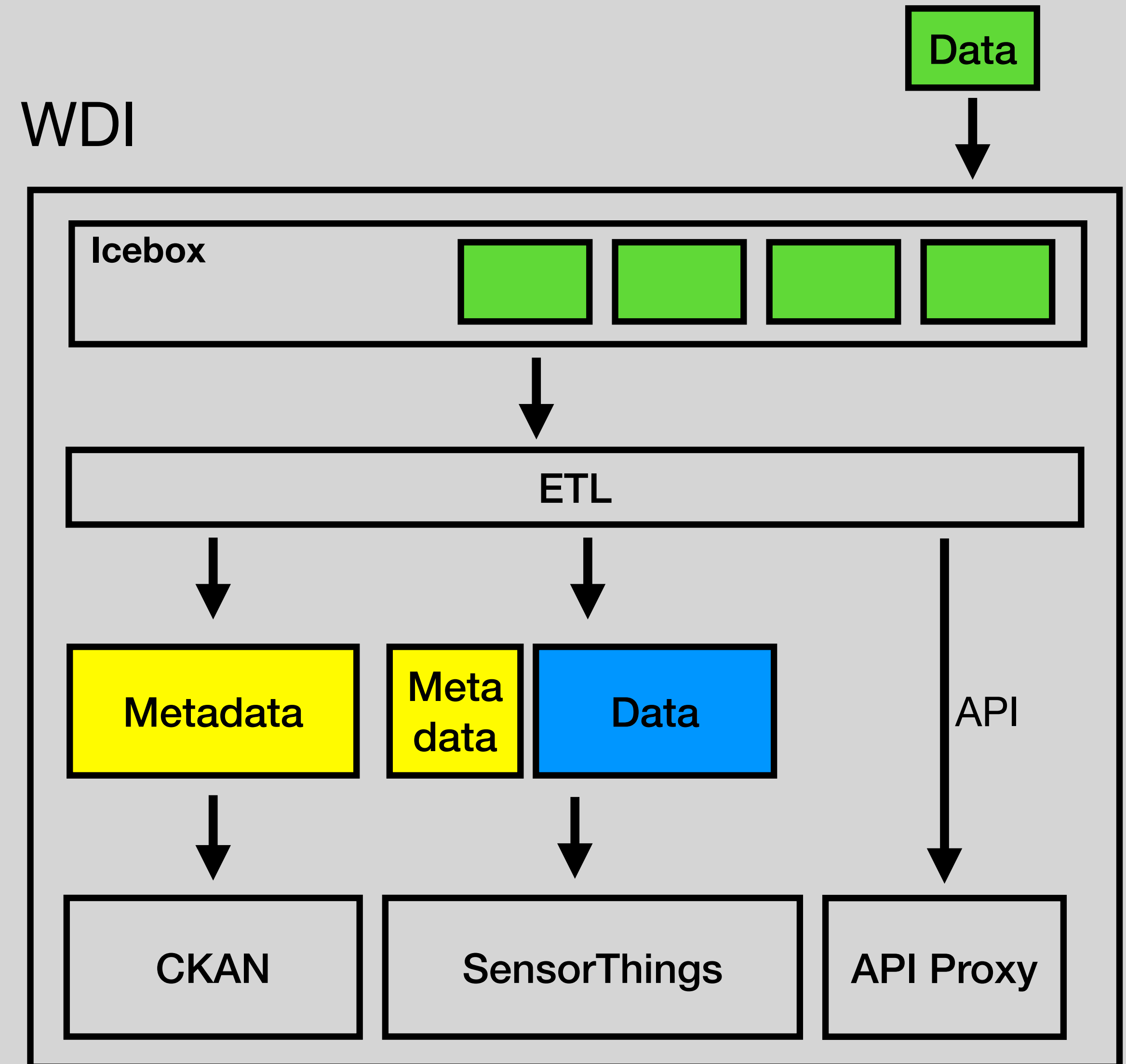


- Solution: Common Data Standard + CKAN + SensorThings API
- How will my data be added to WDA?
- What is the process for different data scenarios?



# Terms

- WDA - Water Data Act. This project
- CKAN - Comprehensive Knowledge Archive Network. The data catalog and metadata store for this project
- CKAN “Icebox” - Data staging area. Submitted datasets are stored here before being made public.
- ETL. Extract, Transform, Load. The process of translating and importing a dataset.
- API - Application Programming Interface, aka simple way for applications to talk to a database via the internet.
- ST API - or STA. SensorThings API, an open source specification for serving location based time series data.
- API Proxy - On the fly translation of an agencies existing API to SensorThings formatted API.



# Your Data

**formats: CSV, XLS, XML, JSON, database dumps, API, etc.**

- You have location based time series data
  - that you want to periodically add to WDA
  - or you have a public API
- Data is compliant with the Common Data Standard
- Data (including metadata) is submitted to WDA by a registered user
- Data is now in CKAN Icebox and WDA takes over...

# Data Scenarios

For all scenarios metadata is extracted and added to CKAN

- Text files; csv, xml, txt, etc...
  - Added to SensorThings
- API
  - API Proxied. On-the-fly translation to SensorThings.
  - Served as is. Integration happens at application layer (non-ideal if API is not standardized)

# Potential Data Submission Process

- User registration
  - person or persons responsible for uploading data need to register for user accounts at NM Water Data CKAN website.
- Web form
  - built custom or...
  - built on top of /adapted from CKAN submission tools