

# Synchronizing Art with Technology

## Data Integration at the Amon Carter Museum of American Art

# Who am I?

Pete Inge

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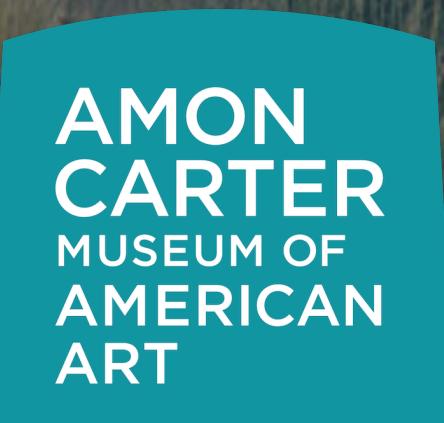




Bluecadet

# What is Amon Carter

Located in the heart of Fort Worth's Cultural District, the Amon Carter Museum of American Art (the Carter) is a dynamic cultural resource that provides unique access and insight into the history and future of American creativity through its expansive exhibitions and programming. Admission is always free. To learn more about the Carter, visit [cartermuseum.org](http://cartermuseum.org).



AMON  
CARTER  
MUSEUM OF  
AMERICAN  
ART

# What is Data Syncing?



# What is Data Syncing?

**Bringing external data into your site for a specific purpose**



# What is Data Syncing?

**Bringing external data into your site for a specific purpose**

**It is NOT migration**



# Why are we talking about this today?

- We're developers at a conference.. duh
- Current state of technology
- We have seen a surge in organizations wanting to digitize

# Why are we talking about this today?

- In the museum space, a typical museum has about 95% of their collection in storage



# the Amon Carter

## Purpose

*Create an easy-to-use and accessible collections explorer. The collections explorer will highlight the Carter's dynamic collection and act as a digital extension of the in-gallery experience.*

# the Amon Carter

## Tech

- CMS: Drupal 8
- Hosting: Pantheon
- Collection Management: EMu
- DAMs: Piction
- Search: Pantheon Search (Solr)



# Collection

All Works   Collection Groups   Artists

# the Amon Carter

## Data

# the Amon Carter Data

## - Artworks

The Amon Carter Museum of American Art

The Carter is open today, from 10 a.m. to 5 p.m. Shop Join Blog

Visit Events Exhibitions Collection





"...a Fish Called Saw"/"...un Pez Que Llamaman Sierra"

Manuel Álvarez Bravo (1902-2002)

Date 1942, printed 1977

Object Type Photographs

Medium Gelatin silver print

Contributors Published by Acorn Editions Limited

Object Format Portfolio

Dimensions Image: 9 7/16 x 6 7/8 in.  
Sheet: 9 15/16 x 7 15/16 in.

Edition portfolio 39/100

Inscriptions Print Verso:  
l.r. signed in graphite: M. Alvarez  
Bravo, \ Mexico.

Location: Off view

See more by [Manuel Alvarez Bravo](#)

Photographs Portfolio women

Teenagers portraits Fish

fishing docks boats Animals

Mexico

black-and-white photographs

# the Amon Carter Data

- Artworks,
- Archive object (pdfs, letters, etc)

JOB NO.	DATE	DESCRIPTION	QUAN	CONTRACT	SHIPPED	DISPOSITION OF MODEL
		AMERICAN ACADEMY OF ARTS & LETTERS (MISSISSIPPI)	ADDRESS	NEW YORK, NEW YORK		
33-757		Bronze Cast, Plaque 17" x 12" Bronze Cast, Fig. H. Greeley 16" high Bronze Cast, Fig. of H. Beecher 14" Bronze Cast, Standing Horse 19" Bronze Cast, "H. Beecher"	1	\$ 75.00	5/28/51	
33-1095		Bronze Doors at Academy Repaired		\$335.00	11/16/51	\$200.00 to Sheidow Bros.
M372		Repaired Robert Frost "Bust"		\$ 25.00	5/20/51	

**Client Card [Geffon,  
American Academy of  
Arts and Letters, New  
York City, NY; Sheidow  
Bronze]**

Roman Bronze Works Archive

This object is part of the  
Carter Archives and is  
[available for research](#).



Contributors Collected by Roman Bronze Works

Date 1902-1977

Genre/Form Inventories

Accession A2012.010.3.0068

Number

Description Geffon, American Academy of Arts and Letters, New York City, New York; Sheidow Bronze; 757 Plaque 1951 1951 17" x 12"; 757 Figure of H. Greeley 1951 1951 16.5"; 757 Figure of H. Beecher 1951 1951 14.5"; 757 Standing Horse 1951 1951 19.5";

# the Amon Carter

## Data

- Artworks,
- Archive object (pdfs, letters, etc)
- Artists

Search | Amon Carter Museum Remington's celeb status

cartermuseum.org/blog/remingtons-celeb-status

How to Make Fres... Work Enablis Drupal Comics presentation Church Games Finances Drupal/Pantheon All Bookmarks

Incognito New Chrome available

## Remington's celeb status

Feb 15, 2021

Frederic Remington made a reputation for himself as an illustrator and a painter. Not one to rest easy with his original success at illustrating and painting, Remington decided to try his hand at bronze sculpture—not exactly the simplest thing to teach yourself. With the help of the leading bronze foundries in the United States, most notably Roman Bronze Works, whose master craftsmen would be Remington's collaborators for life, Remington created sculptures that have perhaps been even more celebrated than his paintings.

How did this happen? A lot might have to do with frequent cameo appearances. The Remington sculpture with the most celebrity status is Remington's *The Broncho Buster* because a cast of it has been a constant Oval Office fixture through party shifts and for presidents of differing personalities and objectives.

Maggie Adler, Curator of Paintings, Sculpture, and Works on Paper

Part of: [Exhibitions](#), [Collection](#)



# the Amon Carter

## Data

- Artworks,
- Archive object (pdfs, letters, etc),
- Artists
- Exhibition Data

Exhibitions | Amon Carter Museum

cartermuseum.org/exhibitions

How to Make Fresh... Work Enablis Drupal Comics presentation Church Games Finances Drupal/Pantheon All Bookmarks

## Exhibitions

Current Exhibitions Upcoming Exhibitions Past Exhibitions

### Temporary gallery closures

The second floor galleries will be closed for maintenance January 23 through April 28, 2024.

[Learn more →](#)

CLOSED TEMPORARILY FEBRUARY 13 THROUGH MARCH 3. EXTENDED THROUGH MAY 12, 2024

#### Trespassers: James Prosek and the Texas Prairie

*Trespassers: James Prosek and the Texas Prairie* features more than 20 new works, including a new large-scale silhouette painting; watercolor portraits of plants collected during his travels across the state of Texas; and trompe l'oeil clay and bronze sculptures of wildflowers.



ON VIEW THROUGH MARCH 31, 2024

#### Re/Framed

*Re/Framed* gives visitors to the Carter a new way to look at the Carter's collection. Several times a year, artwork will be rotated allowing guests to see the works through a different lens.



*First, define the state  
and the constraints*

*Second, decide on an  
execution strategy*

*Third, decide on  
the right tools*

# Say it again

1. First, *define* the **state** and the **constraints**
2. Second, *decide* on an execution **strategy**
3. Third, *decide* on the right **tools**

# *First, define the state and the constraints*

## **Starting Development**

- The Carter's IT team had set up a pipeline for their Collection Data to sync to their DAMs
- Custom Data Structures, in JSON format
- Low volume of updates
- Did not need immediate updates
- Wanted all the imagery **in** the CMS



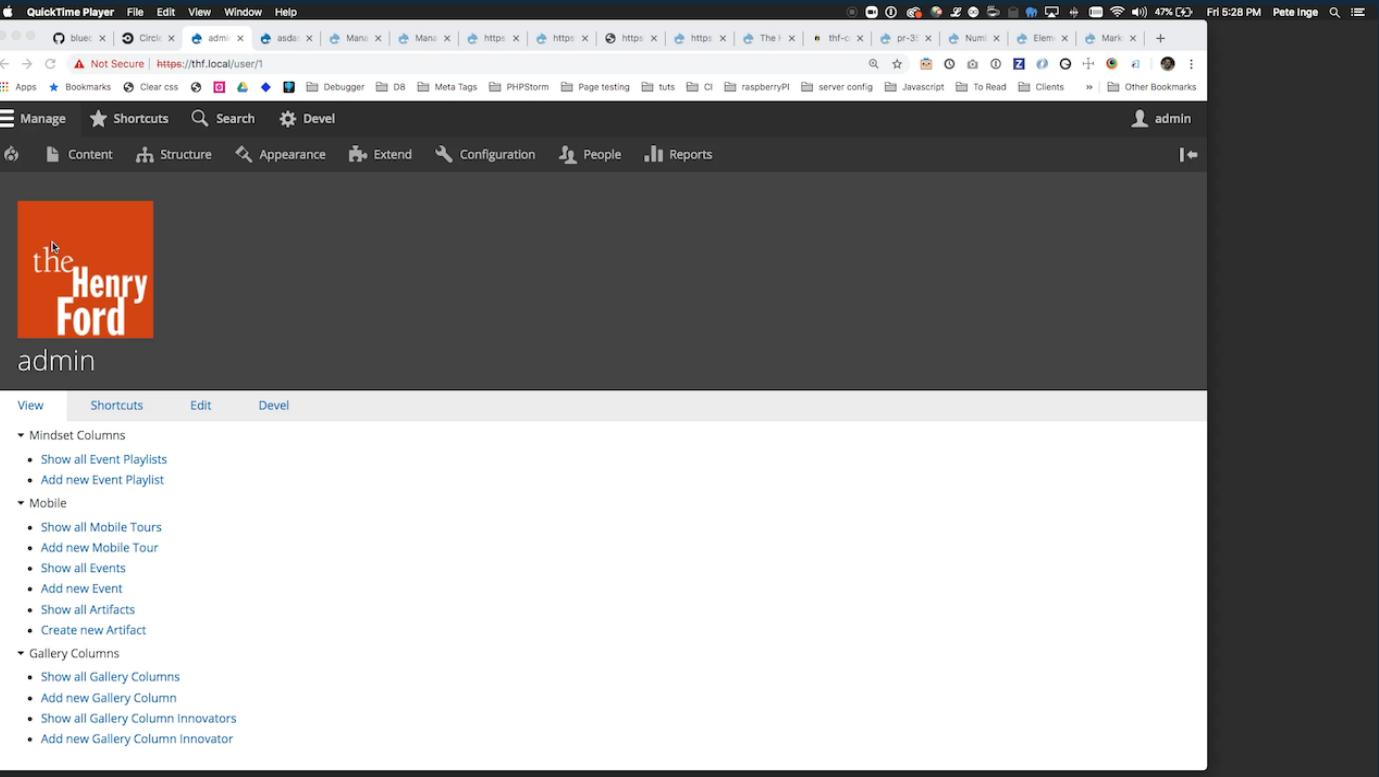
## *Second, decide on an execution strategy*

## **Second, decide on an execution strategy**

1. Use live external endpoints

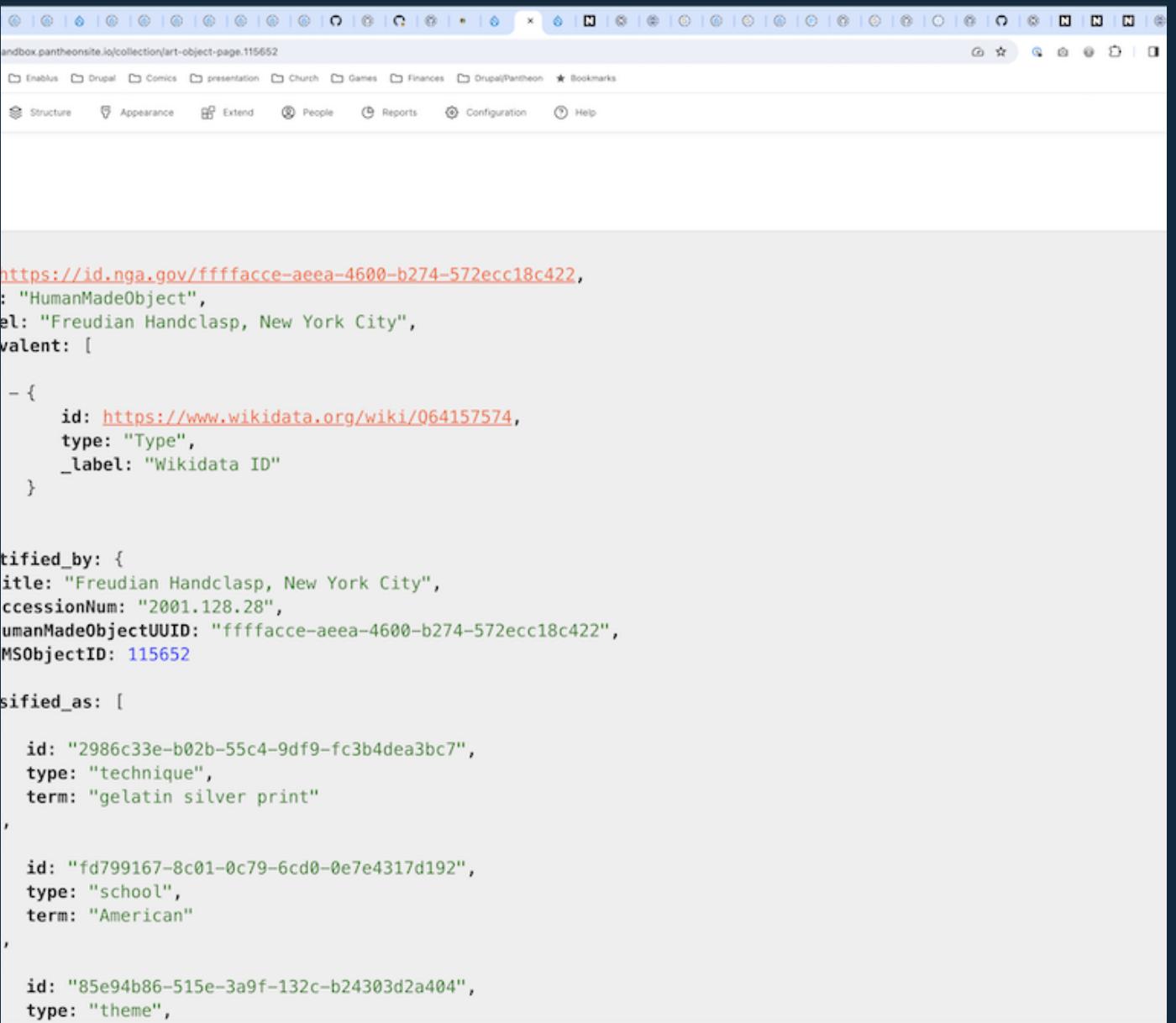
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# *Second, decide on an execution strategy*

1. Use live external endpoints
2. Save raw data, process on the fly

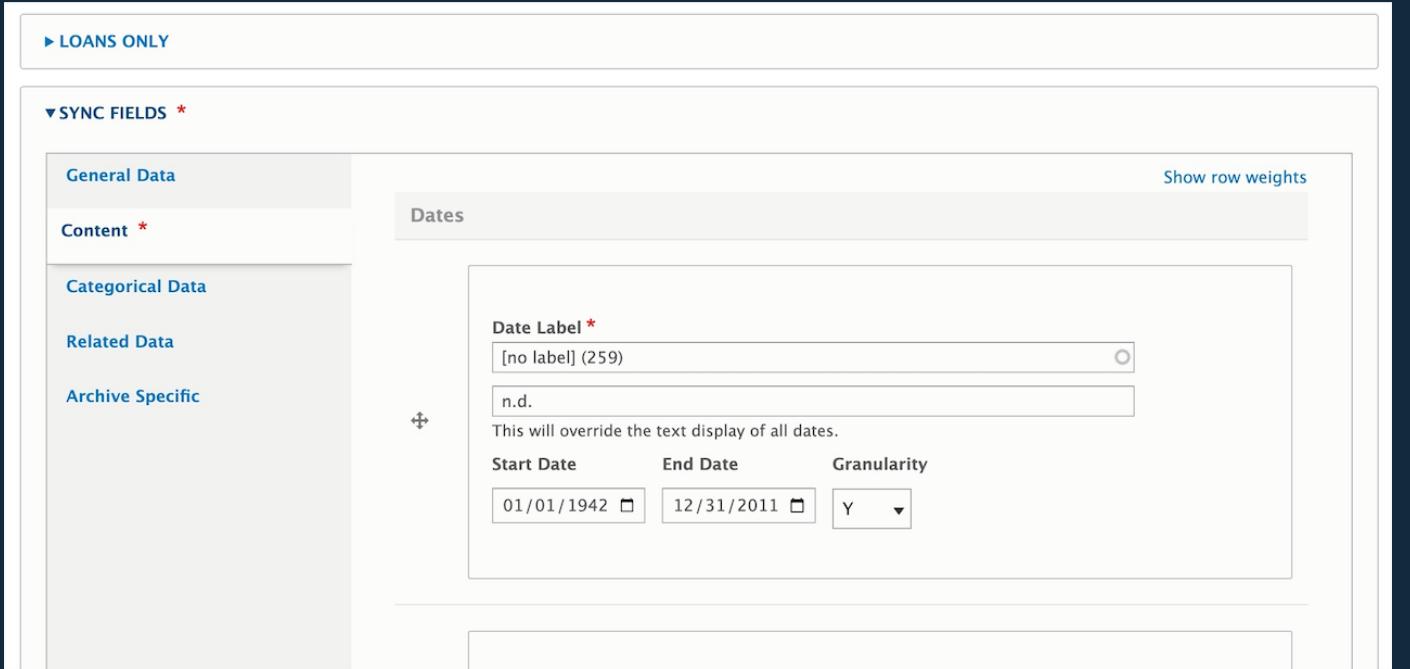


The screenshot shows a web browser window with a URL in the address bar: `andbox.pantheonsite.io/collection/art-object-page.115652`. The page content is a JSON object representing an art object. The JSON includes fields such as `id`, `label`, `valent`, `classified_by`, and `classified_as`. The `valent` field contains a sub-object with `id`, `type`, and `_label`. The `classified_by` field contains a sub-object with `title`, `accessionNum`, `humanMadeObjectUUID`, and `MSObjectID`. The `classified_as` field contains two sub-objects, each with `id`, `type`, and `term`.

```
https://id.nga.gov/fffffacce-aeea-4600-b274-572ecc18c422,  
: "HumanMadeObject",  
el: "Freudian Handclasp, New York City",  
valent: [  
  - {  
    id: https://www.wikidata.org/wiki/Q6415754,  
    type: "Type",  
    _label: "Wikidata ID"  
  }  
  
  classified_by: {  
    title: "Freudian Handclasp, New York City",  
    accessionNum: "2001.128.28",  
    humanMadeObjectUUID: "fffffacce-aeea-4600-b274-572ecc18c422",  
    MSObjectID: 115652  
  }  
  
  classified_as: [  
    - {  
      id: "2986c33e-b02b-55c4-9df9-fc3b4dea3bc7",  
      type: "technique",  
      term: "gelatin silver print"  
    },  
  
    - {  
      id: "fd799167-8c01-0c79-6cd0-0e7e4317d192",  
      type: "school",  
      term: "American"  
    },  
  
    - {  
      id: "85e94b86-515e-3a9f-132c-b24303d2a404",  
      type: "theme",  
    }  
  ]
```

## Second, decide on an execution strategy

1. Use live external endpoints
2. Save raw data, process on the fly
3. Bring all data into Drupal  
*Entities, nodes and taxonomies etc. (Drupalize the data)*



The screenshot shows a configuration interface for a 'LOANS ONLY' entity. On the left, there's a sidebar with sections: 'General Data', 'Content \*', 'Categorical Data', 'Related Data', and 'Archive Specific'. The main area is titled 'Dates' and contains a 'Date Label' field with '[no label] (259)' selected, a note about overriding text display for all dates, and date range fields for 'Start Date' (01/01/1942) and 'End Date' (12/31/2011), along with a 'Granularity' dropdown set to 'Y'.

## **Second, decide on an execution strategy**

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etc.**



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We wanted to “Drupalize” all the data

- Needed related data, the data was not in a silo

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We wanted to “Drupalize” all the data

- Needed related data, the data was not in a silo
- Content was going to be *enhanced* in the CMS
- Content was going to be indexed through the Search API<sup>2</sup>

<sup>2</sup> honestly not needed, but I didn't fully understand that at the time



# *Third, decide on the right tools*

What tools exist?



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## 1. Migrate Module



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1. Migrate Module
2. Feeds Module



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1. Migrate Module
2. Feeds Module
3. Custom Code



# *Third, decide on the right tools*

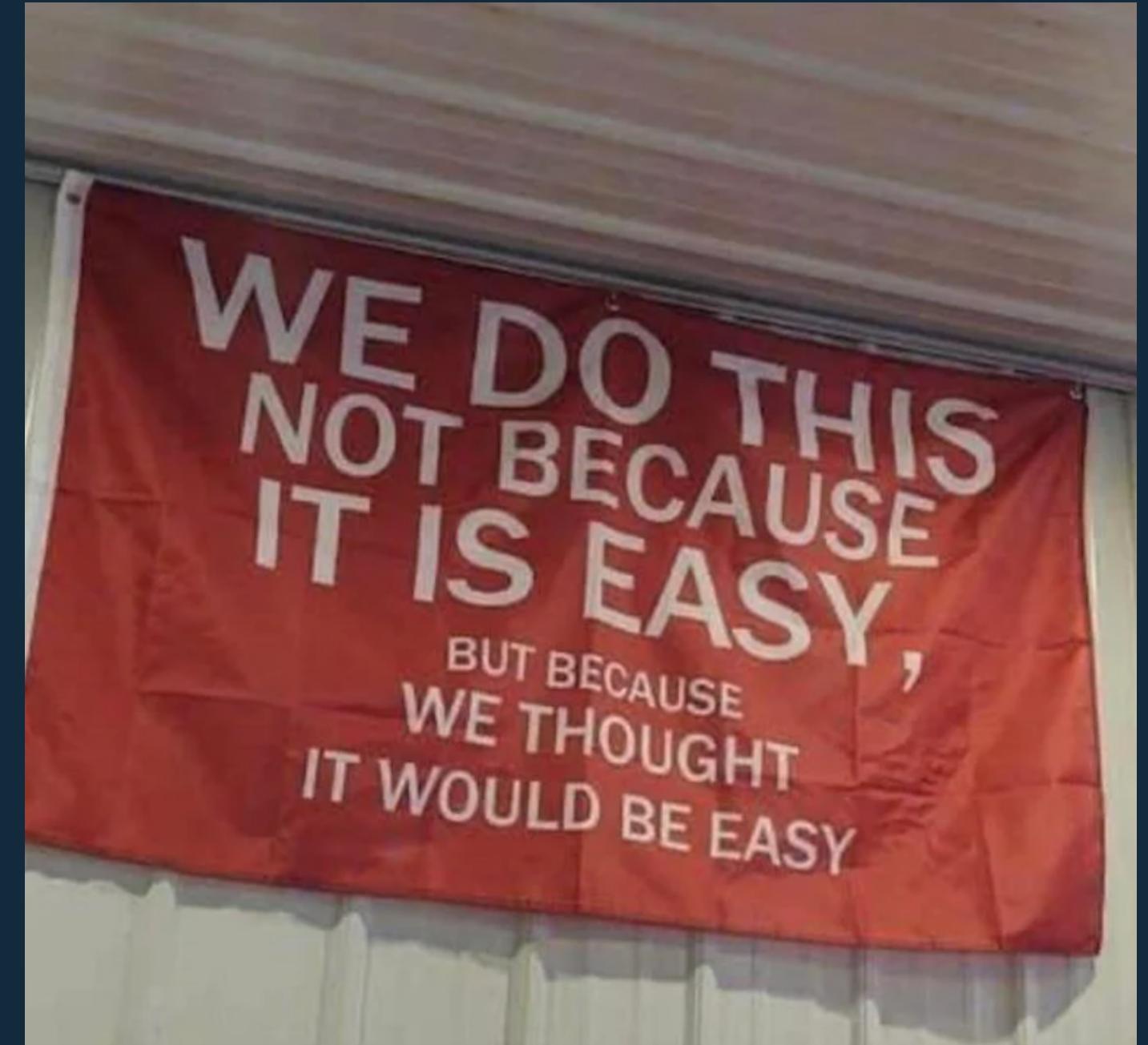
What tools exist?

1. Migrate Module
2. Feeds Module
3. Custom Code
4. External to CMS



## *Third, decide on the right tools*

1. Migrate Module
2. Feeds Module
3. **Custom Code**
4. External to CMS



# Third, decide on the right tools

Timing and queueing the updates required a custom code solution



# Third, decide on the right tools

Timing and queueing the updates required a custom code solution

1. Grab Data

2. Add item to a Queue  
Worker(s)

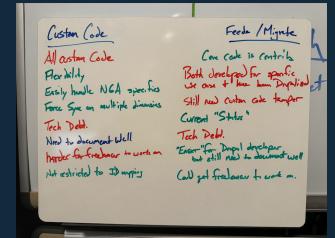
3. Process Item in the queue at a  
later time (cron)

```
...  
$queue_factory = \Drupal::service('queue');  
$queue = $queue_factory->get($queue_id);  
  
$queue_manager = \Drupal::service('plugin.manager.queue_worker');  
$queue_worker = $queue_manager->createInstance($queue_id);  
  
$start = time();  
  
// Run for 25 seconds or 10000 items.  
$count = 1;  
while ((time() - $start) < 25 && $count <= $total) {  
    $item = $queue->claimItem(43200);  
}  
...
```

# Third, *decide on the right tools*

## Custom Code

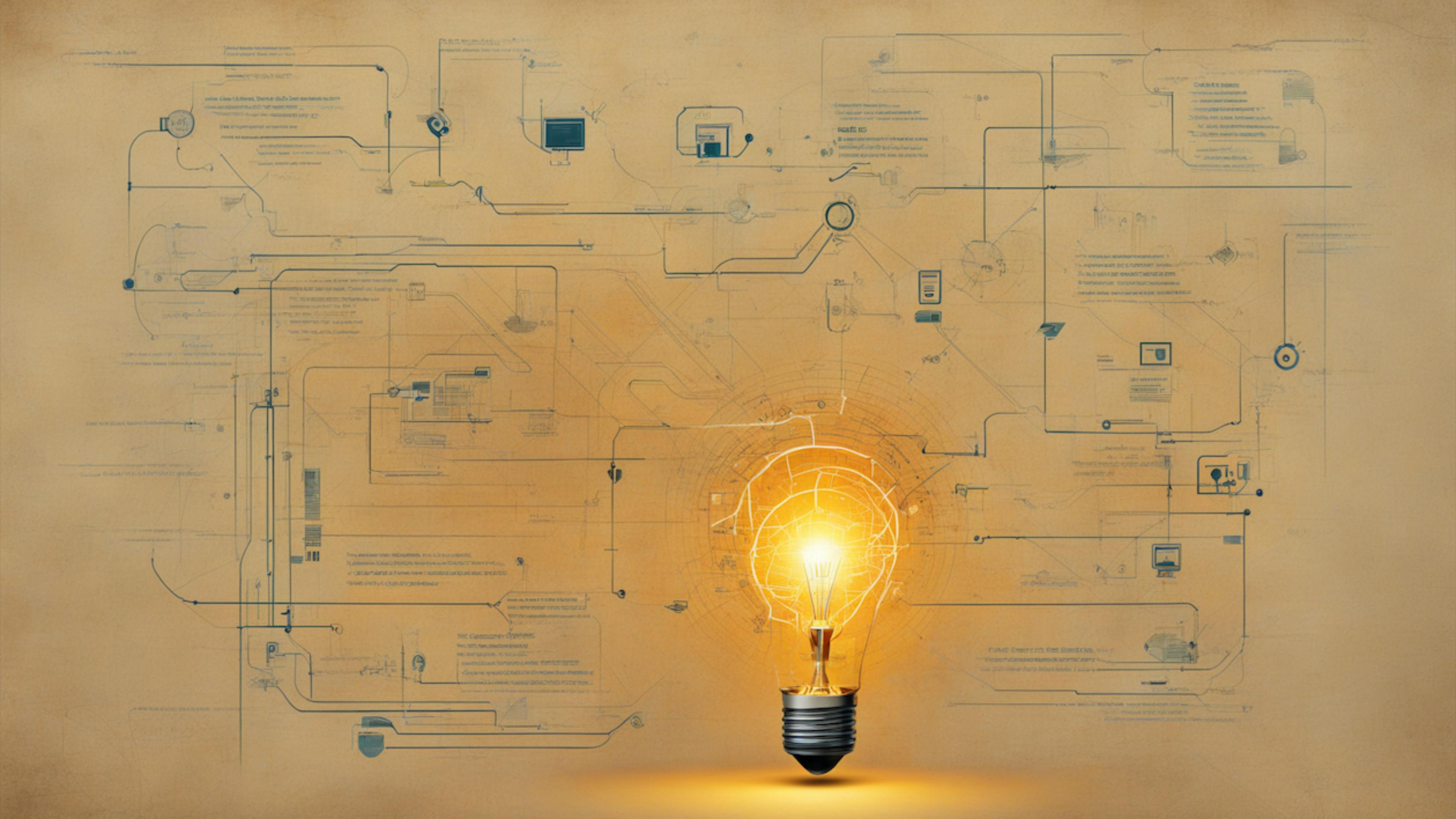
Actual ingestion of data could have been Feeds or Migration, but would have required some custom tampering, or migration processes<sup>3</sup>



<sup>3</sup>I always go back and forth, b/c I want to do it the “Drupal way” but reality is you will still need custom code.

# Say it again

1. First, *define* the **state** and the **constraints**
  - Create a dynamic collections explorer to highlight the Carter's collection.
2. Second, *decide* on an execution **strategy**
  - Bring all data into Drupal Entities, *nodes* and *taxonomies* etc.
3. Third, *decide* on the right **tools**
  - Custom Code



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  - Text is fast, images (files) are not
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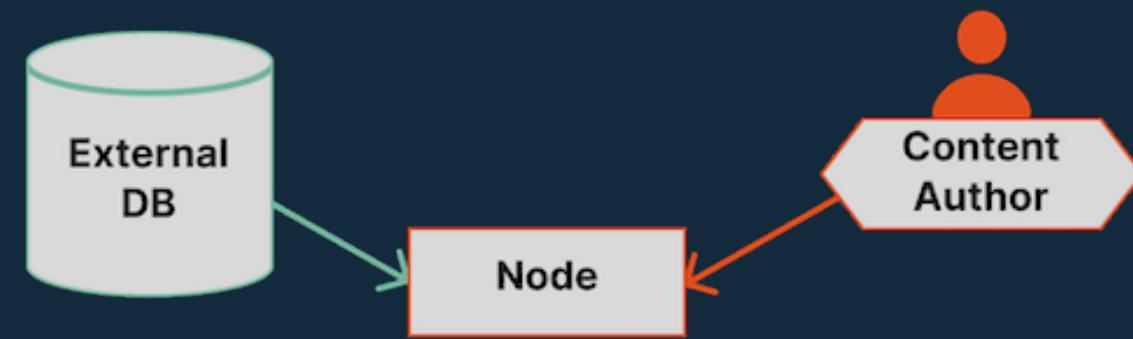
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- Reliability of the external data source
  - Availability and speed
  - Dates
  - Pre-caching

# Future Thoughts and Strategies

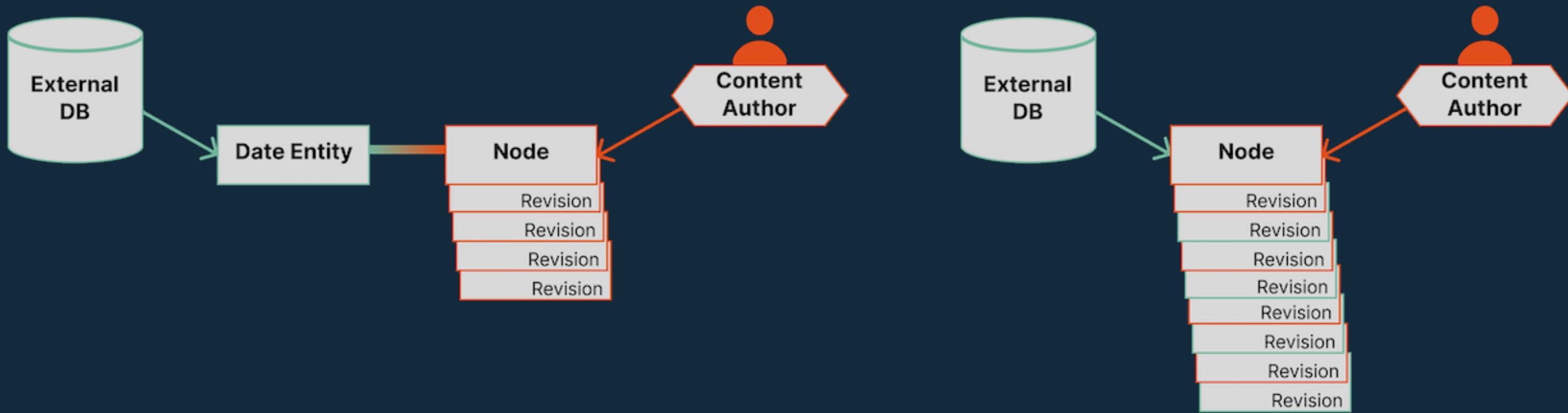
# Future Thoughts and Strategies

- “Synced Data Entities” connected to “Enhanced Data Nodes”



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- “Synced data Entities” connected to “Enhanced Data” nodes
- Bringing in majority of data to custom database tables

artwork	group	type	content	content_inverted	year
2904	referred_to_by	bibliography	Wiebenson/Baines 1993, no. 128.		1993
2904	referred_to_by	attribution	Andrea Palladio and Pierre Le Muet (authors)		NULL
2904	referred_to_by	provenanceText	Mark J. Millard, New York; purchased by NGA, 1983.		NULL
2904	referred_to_by	creditLine	Mark J. Millard Architectural Collection		NULL
2904	referred_to_by	medium	2 parts in 1 vol: ill: part 1: engraved title page plus 32 engravings un...		NULL
2904	referred_to_by	dimensionsText	page size: 17.1 x 12.7 cm (6 3/4 x 5 in.)?overall size (volume closed):		NULL
2904	referred_to_by	attribution	NULL	Palladio, Andrea and Pierre Le Muet (authors)	NULL
2904	alternate_identifiers	Old CMS Object ID	62112.0		NULL
101724	referred_to_by	brief_narrative	<cp>At the sixth impressionist exhibition in the spring of 1881, Edgar...		2024
101724	referred_to_by	bibliography	Kopper, Philip. „America's National Gallery of Art: A Gift to the Nati...		1991
101724	referred_to_by	bibliography	„National Gallery of Art Special Issue. Connaissance des Arts“, Par...		2000
101724	referred_to_by	bibliography	Marks, Peter. "Peck to Bring Degas Piece to Life, and On Pointe." _T...		2013
101724	referred_to_by	bibliography	Morton, Mary. "Paul Mellon: Private collector for the public." In _Col...		2016
101724	referred_to_by	exhibition_history	Edgar Degas 1834-1917: Original Wax Sculptures, M. Knoedler & C...		1955
101724	referred_to_by	exhibition_history	Exposition Degas au profit de la Ligue Franco-Anglo-Américaine co...		1924
101724	referred_to_by	exhibition_history	Exposition des Sculptures de Degas, Galerie A.A. Hébrard, Paris, 19...		1921
101724	referred_to_by	exhibition_history	Possibly Trois siècles d'art français, Paris, possibly 1920s-1930s.		1920
101724	referred_to_by	bibliography	Lindsay, Suzanne Glover, Daphne S. Barbour, and Shelley G. Sturma...		2010
101724	referred_to_by	exhibition_history	„6me Exposition de Peinture_, 35 bd. des Capucines, Paris, 1881, n...		1881
101724	referred_to_by	exhibition_history	An Enduring Legacy: Masterpieces from the Collection of Mr. and M...		1999
101724	referred_to_by	exhibition_history	Sculpture by Degas, Virginia Museum of Fine Arts, Richmond, 1956.		1956
101724	referred_to_by	exhibition_history	Galerie A.A. Hébrard, Paris, 1920.		1920
101724	referred_to_by	exhibition_history	Art for the Nation: Gifts in Honor of the 50th Anniversary of the Nati...		1991
101724	referred_to_by	exhibition_history	Possibly on loan to the Musée du Louvre, Paris, 1929.		1929
101724	referred_to_by	bibliography	Goetschy, Gustave. "Indépendants et impressionnistes." _Le Voltaire...		1880
101724	referred_to_by	bibliography	Bertall [Charles-Albert d'Arnoux]. "Exposition: Des Peintres intransi...		1881
101724	referred_to_by	bibliography	Champier, Victor. "La Société des artistes indépendants." _L'Année...		1882
101724	referred_to_by	bibliography	de Charry, Paul. "Les Indépendants." _Le Pays_ (22 April 1881): 3.		1881
101724	referred_to_by	bibliography	Claretie, Jules. "La Vie à Paris: Les Artistes indépendants." _La Vie...		1881
101724	referred_to_by	bibliography	Comtesse Louise. "Lettres familiaires sur l'art: Salon de 1881." _La...		1881
101724	referred_to_by	bibliography	Enault, Louis. "Chronique." _Moniteur des arts_ (15 April 1881): 1.		1881
101724	referred_to_by	bibliography	Berson, Ruth, ed. „The New Painting: Impressionism 1874-1886 —...		1996
101724	referred_to_by	bibliography	Czestochowski, Joseph S., and Anne Pingeot. „Degas--Sculptures....		2002
101724	referred_to_by	bibliography	Hargrove, June. "Degas's 'Little 14-year-old Dancer': Madonna of t...		1998
101724	referred_to_by	bibliography	Hargrove, June. "Degas's 'Little Dancer' in the World of Pantomime..."		1998
101724	referred_to_by	bibliography	Hargrove, June. „Little Fourteen-Year-Old Dancer_": Madonna of th...		2001
101724	referred_to_by	bibliography	Schaller, Catherine. "Edgar Degas et la physiognomonie." _Annales...		1999
101724	referred_to_by	bibliography	Druick, Douglas. "Framing „The Little Dancer Aged Fourteen_," In R...		1998
101724	referred_to_by	bibliography	Ephrussi, Charles. "Exposition des artistes indépendants." _La Chro...		1881
101724	referred_to_by	bibliography	Goetschy, Gustave. "Exposition des artistes indépendants." _Le Vol...		1881
101724	referred_to_by	bibliography	Mantz, Paul. "Exposition des œuvres des artistes indépendants." ...		1881
101724	referred_to_by	bibliography	de Mont, Élie [Elisée-Louis de Montagnac]. "L'Exposition du boulev...		1881
101724	referred_to_by	bibliography	Our Lady Correspondent. [Untitled, and unsigned, review of the Ex...		1881
101724	referred_to_by	bibliography	Trianon, Henry. "Sixième Exposition de peinture par un groupe d'art..."		1881
101724	referred_to_by	bibliography	de Villars, Nina [Marie-Anne Gaillard, Mme Hector de Callias Villard...		1881
101724	referred_to_by	bibliography	Huysmans, Joris-Karl. "L'Exposition des indépendants en 1881." In...		1883
101724	referred_to_by	bibliography	Gsell, Paul. "Edgar Degas, statuaire." _La Renaissance de l'Art Fran...		1918
101724	referred_to_by	bibliography	Kennicott, Philip. "As Disturbing as Enchanting." _Washington Post...		2014
101724	referred_to_by	bibliography	Blühm, Andreas, et al. Essays by Wolfgang Drost and June Hargrov...		1996
101724	referred_to_by	bibliography	Callen, Anthea. _The Spectacular Body: Science, Method, and Mea...		1995
101724	referred_to_by	bibliography	Havemeyer, Louise B. _Sixteen to Sixty: Memoirs of a Collector_...		1961
101724	referred_to_by	bibliography	Luchs, Alison. "The Degas Waxes, c. 1878 - c. 1911." In _Art for the...		1991
101724	referred_to_by	bibliography	Loyrette, Henri. _Degas_. Paris, 1991: 387, 391-394, 402, 612-614,...		1991
101724	referred_to_by	bibliography	_Degas inédit: Actes du Colloque Degas, Musée d'Orsay 18-21 avril...		1989

# Future Thoughts and Strategies

- “Synced data Entities” connected to “Enhanced Data” nodes
- Bringing in majority of data to custom database tables
- Caching strategies (in regards to large datasets)<sup>4</sup>



<sup>4</sup> Permanent Cache Bin -> <https://www.drupal.org/project/pcb>

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- Bringing in majority of data to custom database tables
- Caching strategies (in regards to large datasets)
- Re: Search API, writing custom index plugins is really "easy" (Once you figure it out)



# Thank you!

Questions?

Comments?

Discussion?

Feedback?



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[pete.inge@gmail.com](mailto:pete.inge@gmail.com)

[peteinge.com](http://peteinge.com)

[github.com/pingevt/drupalcamp\\_nj\\_2024\\_data\\_sync](https://github.com/pingevt/drupalcamp_nj_2024_data_sync)



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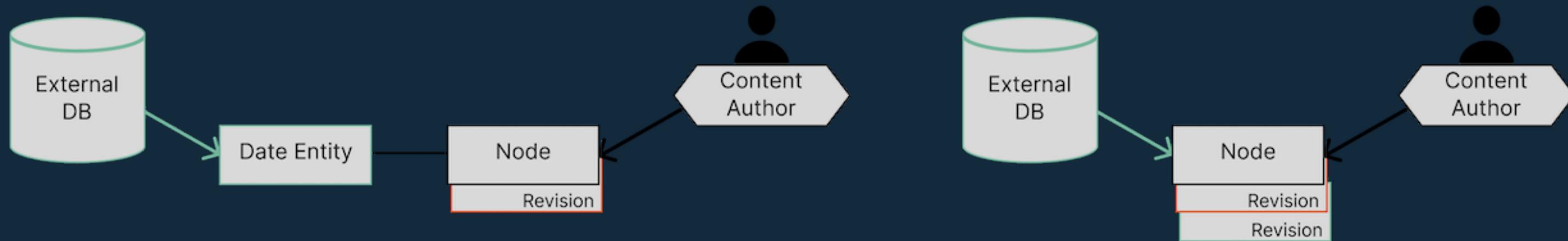
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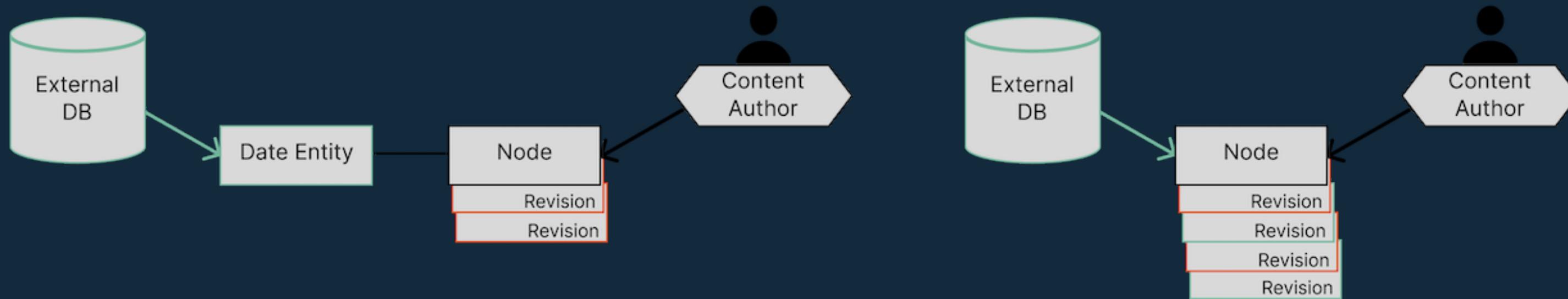
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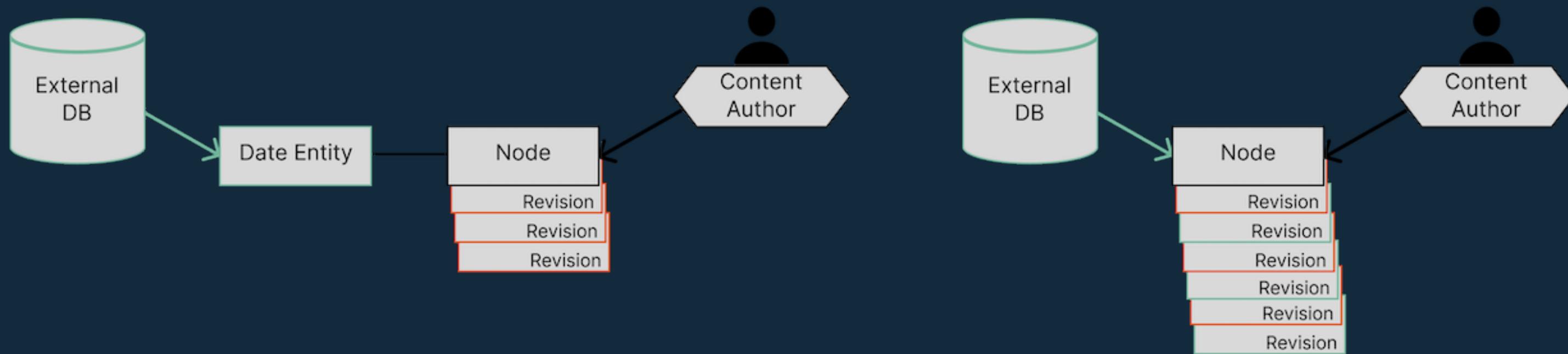
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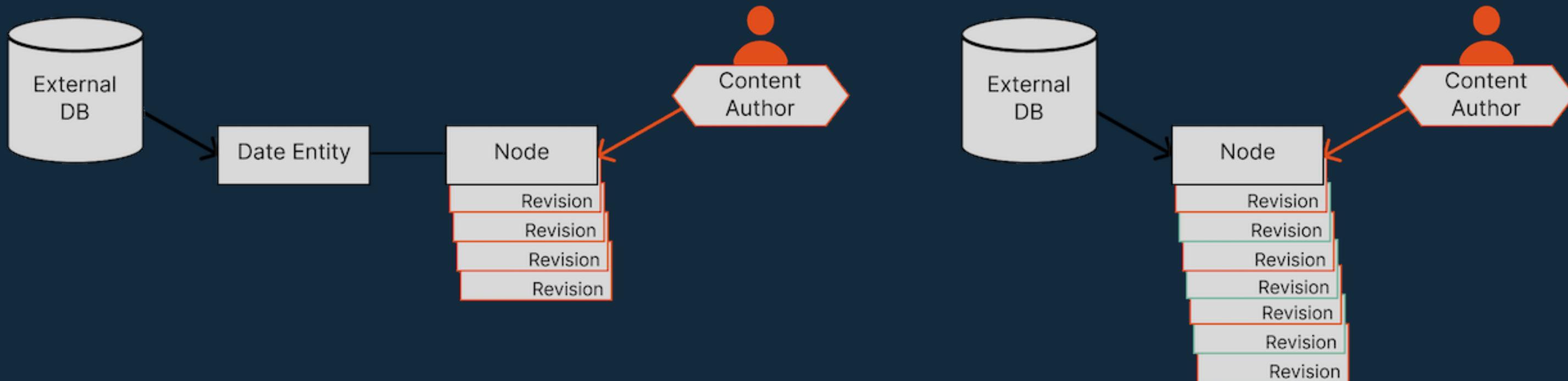
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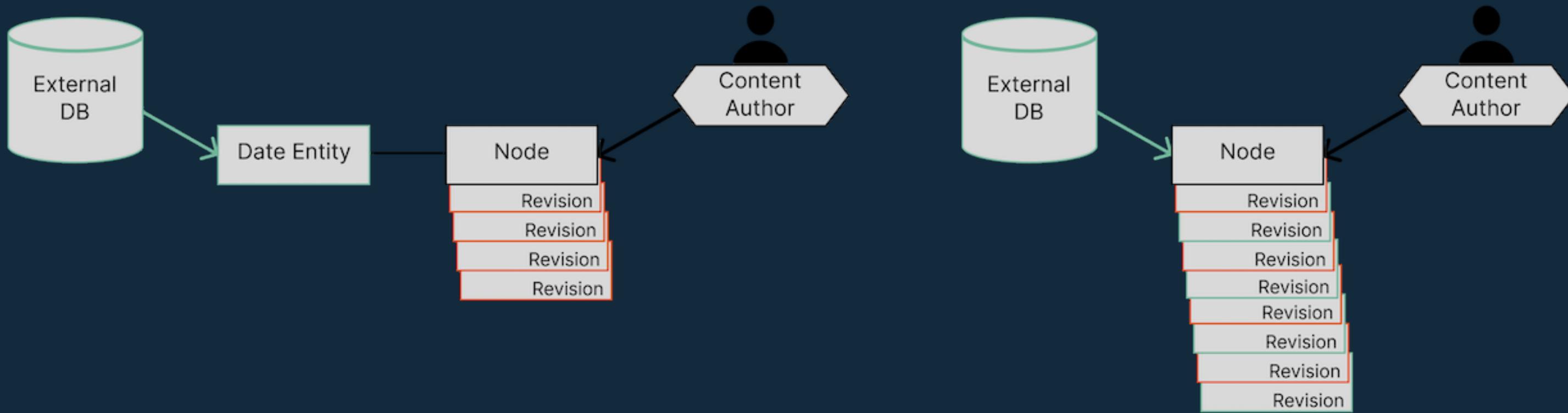
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- “Synced Data Entities” connected to “Enhanced Data Nodes”



# Future Thoughts and Strategies

- “Synced Data Entities” connected to “Enhanced Data Nodes”

