



BEYOND FORECOURT

Mobility in a data-driven world

IFSF 30th Anniversary Conference





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Open Retailing API Data Dictionary

David Ezell

Director of New Initiatives
Conexus

Ian Brown

Former IFSF Strategy Manager



Data

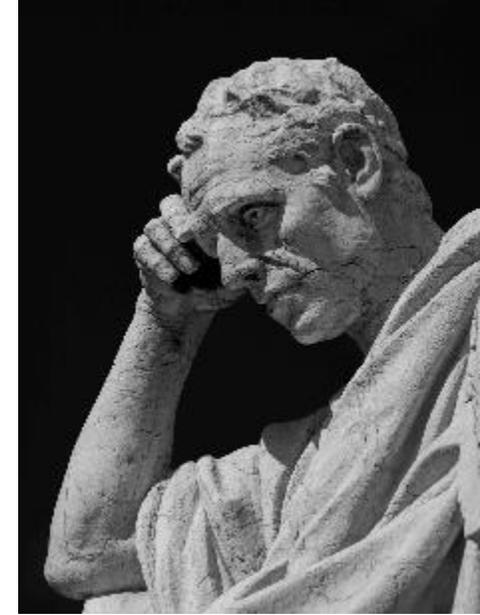
DICTIONARY



Questions to be answered

- Where did the idea originate?
- What are the benefits?
- What are the challenges?
- What do we have now, and what is the process?
- What are our plans?

Naming, Organizing and Finding Things



Sharing Things





Benefits of a data dictionary

Benefits for software development

- Enhanced clarity and understanding
- Common language for both standardized and proprietary interfaces
- Better search capabilities
- Improved data quality
- Better Access to Data Analytics

Benefits between organizations

- Enhanced collaboration
- Ease of entry into IT ecosystem for new suppliers

Benefits for the industry as a whole

- Better proof of definition compliance
- Regulatory compliance and reporting
- Scalability and interoperability
- Future proofing

Reducing “Total Cost of Ownership”

- Purchase price
 - Selection cost for the retailer
 - Integration costs borne by the retailer
 - Product design and redesign costs borne by the supplier
- Operating costs
 - Integration costs borne by the supplier
 - Continuing regulatory compliance costs borne by both the retailer and the supplier



A few current examples of benefits...

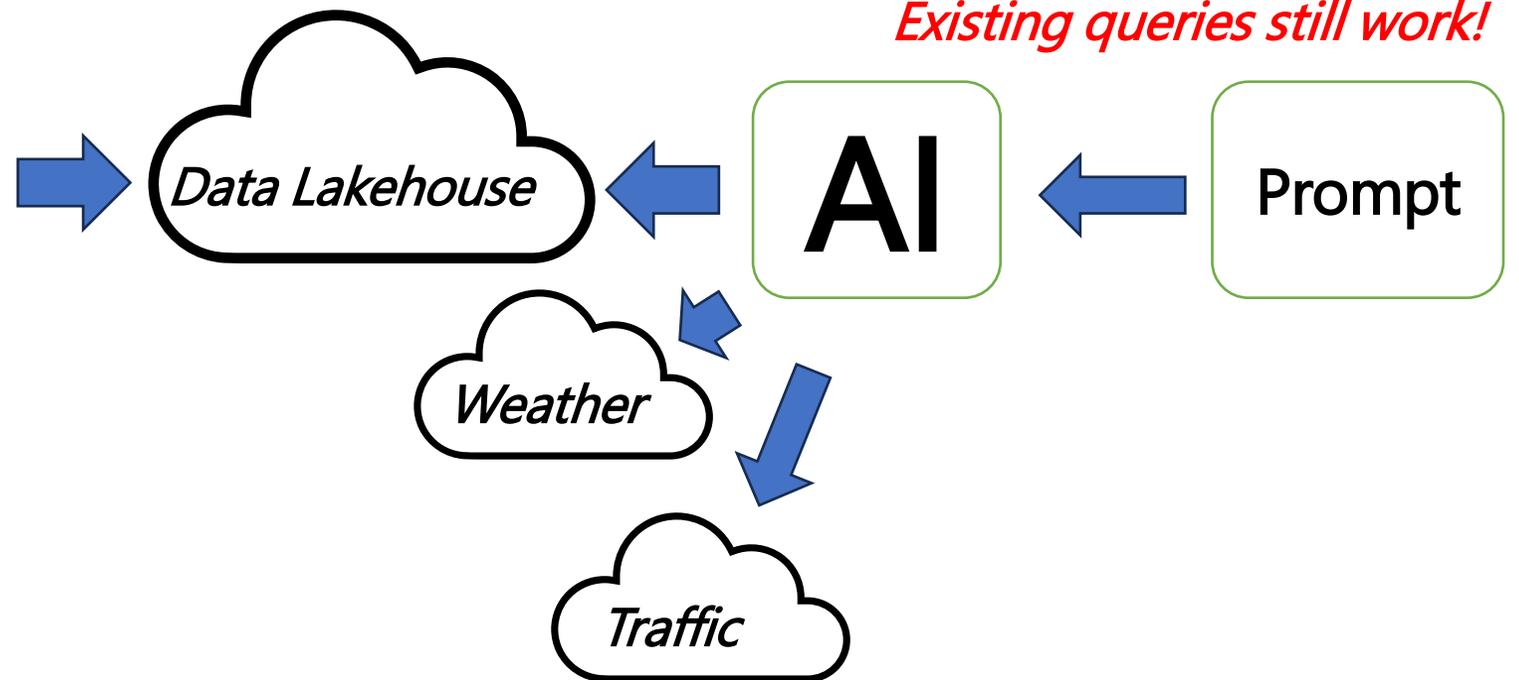
Introducing a hydrogen transaction

In dictionary now

```
fuelingPointID  
pumpNo  
nozzleNo  
transactionSeqNo  
transactionDate  
amount  
volume  
unitPrice
```

Add for Hydrogen

```
ambientTemperature  
inletTemperature  
pressure  
integrityEvents []
```



Challenges



Definition Discovery



Process for Maintenance

Definition Discovery

- The problem:
 - Developers work fast,
 - Standard naming of data is a low priority,
 - And finding the right definitions takes too long.
- Basic approaches:
 - Static index
 - Semantic query
 - Integrated development environment intelligence



**Developers are busy developing APIs
– hard to catch**



Static Indexing

- Text searching
- Hierarchical naming (top down)
- Cross references (sideways)
 - From dictionary definition to API
 - From API to dictionary definition

Using text searches – money amounts

```
> grep -l money *.yaml
envelopeIDElement.yaml
envelopeIDType.yaml
itemTypeCodeEENUMType.yaml
moneyOrderNumberElement.yaml
moneyOrderNumberType.yaml
moneyOrderTypeIndicatorElement.yaml
moneyOrderTypeIndicatorType.yaml
priceOverrideReasonEENUMType.yaml
tenderCodeEENUMType.yaml
```

```
> grep -l currency *.yaml
amountObject.yaml
countrySettingsObject.yaml
currencyEENUMType.yaml
currencyExchangeRateElement.yaml
currencyExchangeRateType.yaml
loyaltyCurrencyEENUMType.yaml
➔ monetaryAmount20Object.yaml
posJournalDictionaryObjects.yaml
➔ price10Object.yaml
```



Hierarchical naming

nbr	sub function name	Group function name
1.	Backoffice	Administration
4a	Forecourt device controller	Fueling
7a	Mobile payment and loyalty	Payment and loyalty



Hierarchical naming enhanced



1.operations.back-office ▾

- GET approvalCodeElement definition
- GET approvalCodeType definition
- GET approvalReferenceCode... definition
- GET approvalReferenceCodeT... definition
- GET posJournalEventDetailO... definition

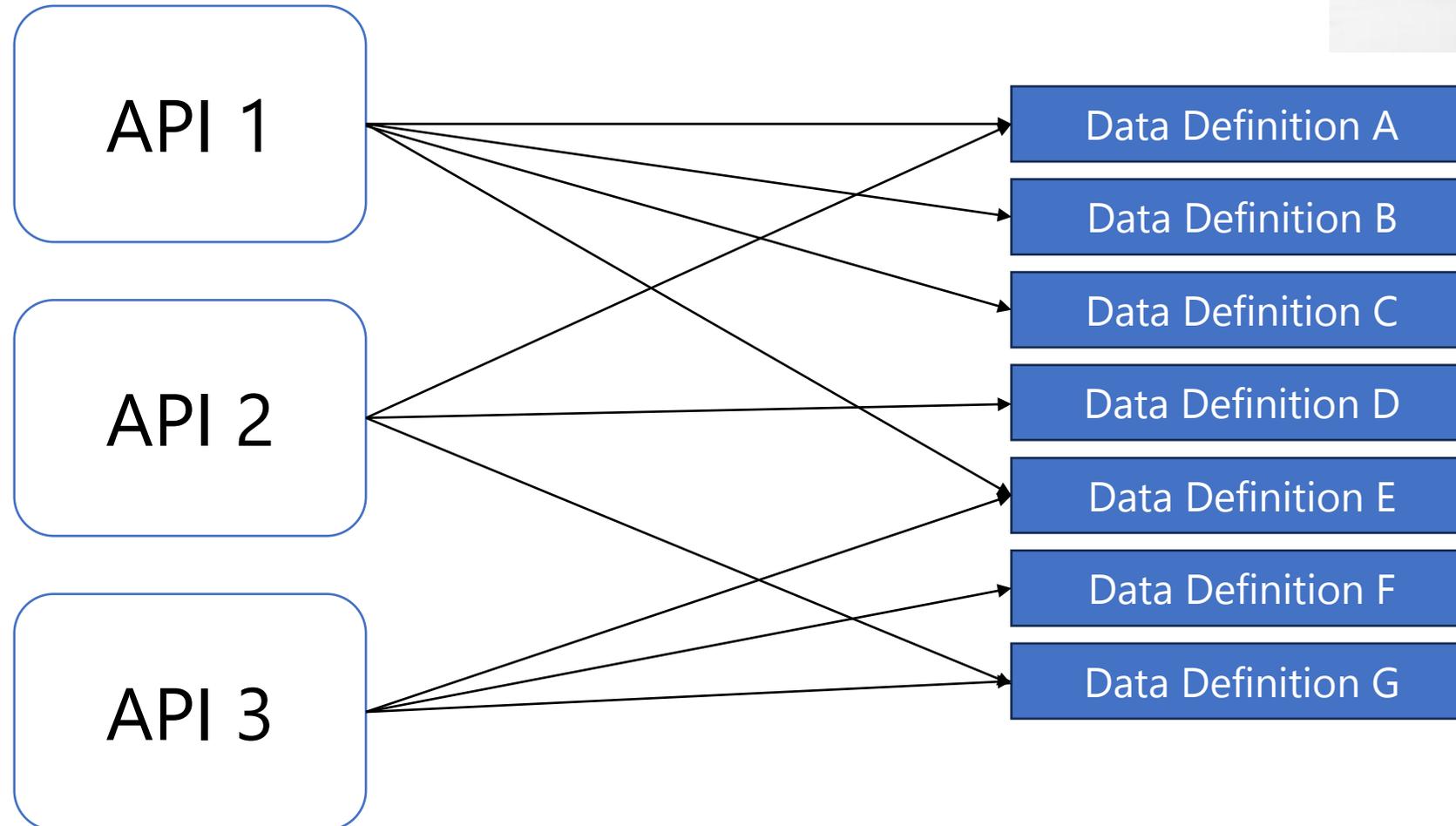
4a.fueling.forecourt-device-controller ▾

- GET fuelGradeIDObject definition
- GET fuelModesElement definition
- GET fuelPositionIDElement definition
- GET fuelProductObject definition

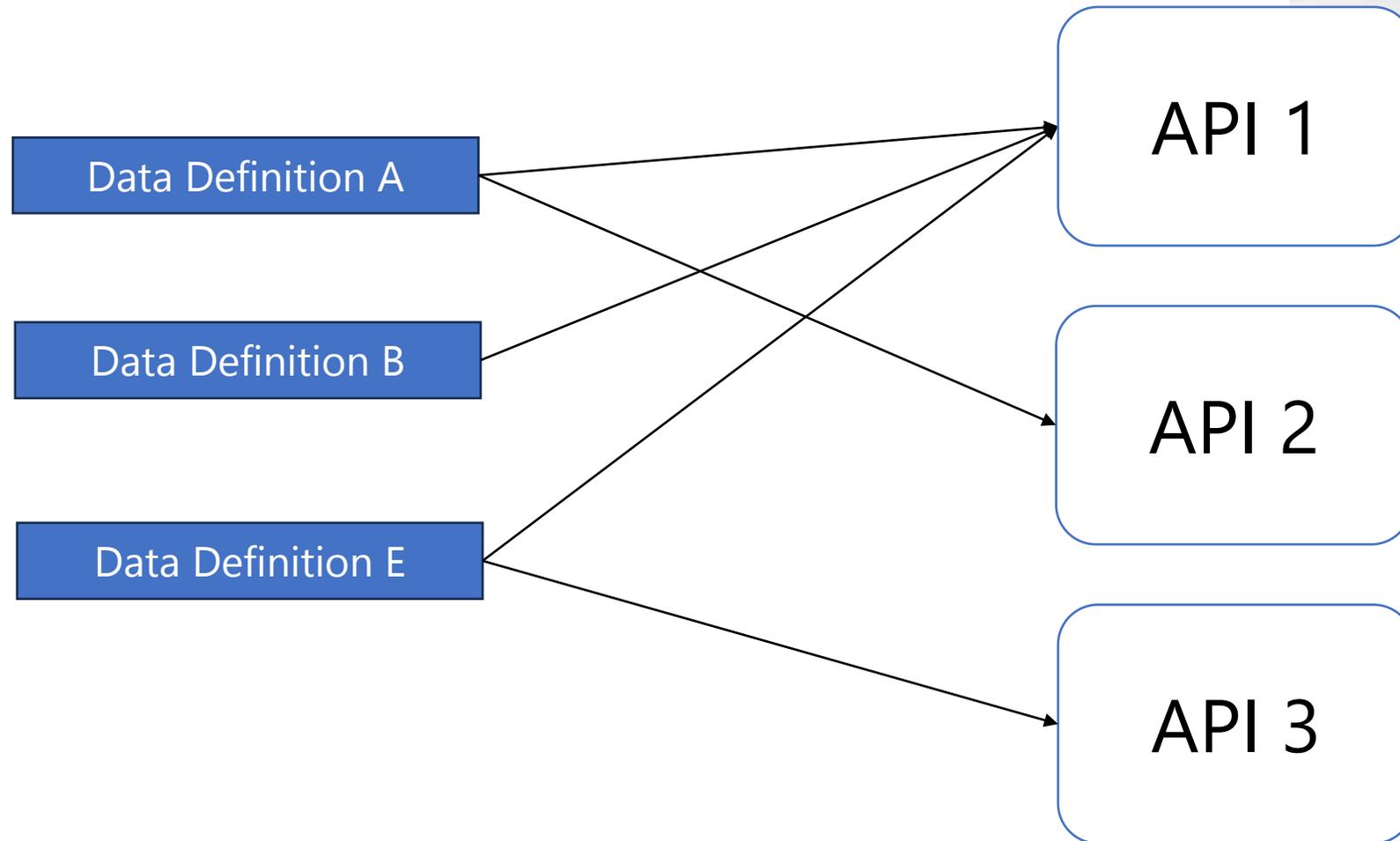
7a.payment-and-loyalty.mobile-payment-and-loyalty ▾

- GET connectionIDType definition
- GET fuelPositionIDElement definition
- GET fuelProductObject definition
- GET loyaltyProgramDataObje... definition

Cross referencing: top down



Cross referencing: bottom up

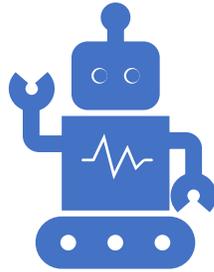




Semantic query



Considerations for “semantic” query



Large Language Model

LLMs provide new and more powerful search capability

New software options allow multiple tool integrations



Other considerations

Existing descriptions must be improved

IP licensing issues (how was the base LLM trained?)

Advanced query – developer support

Me:

I am creating a hive create table syntax for cashiers clocking in and out. I need you to write the create table statement for me. Use the Conexus data dictionary and standards for site and organizationId,n etc. Include site information, date time in utc, cashier id, in time, out time, business period, etc.

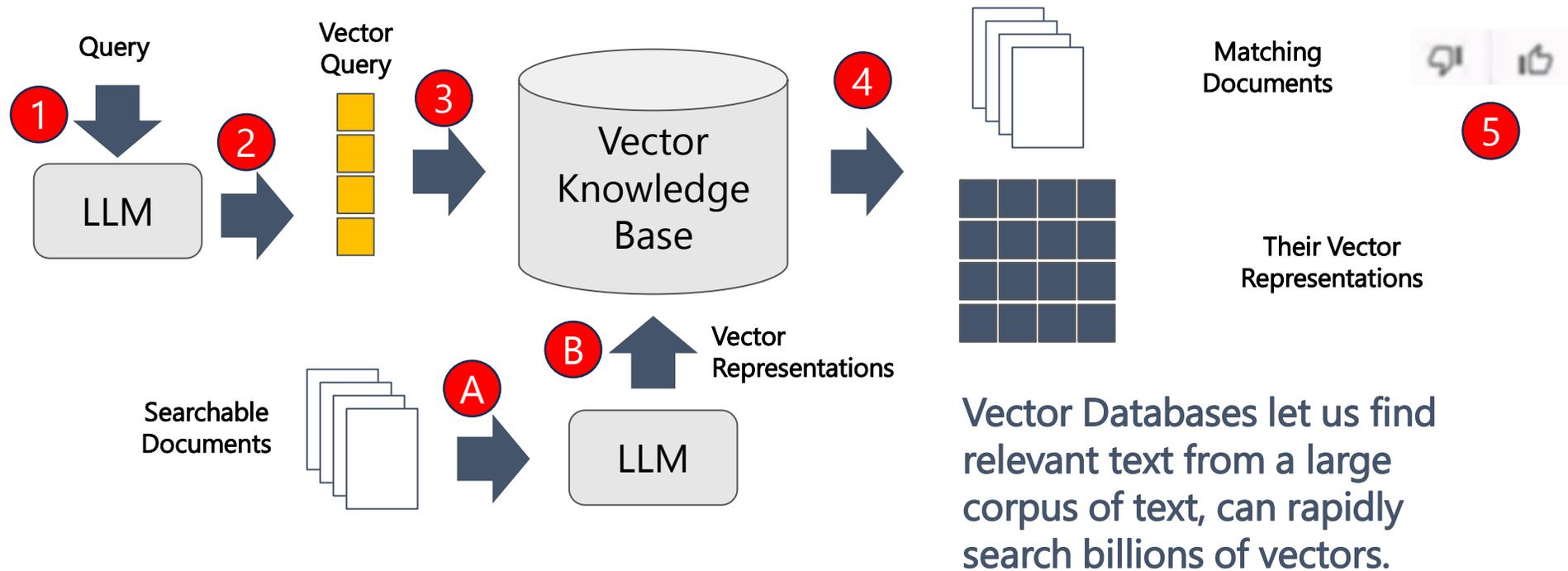
Blaze:

Sure, I can help with that. Here's a sample Hive CREATE TABLE statement using the Conexus data dictionary and Ignite Retail Database standards. Please adjust as needed based on your specific requirements:

Implementing an LLM solution



How does all of this work?



Dr. Alan Lockett – Conexus Annual Strategy Conference

Data dictionary today

The data dictionary today

- Process is being used
 - Review by the Joint API WG
 - Review by TAC and IFSF Project Manager
- Over 600 entries so far
 - Gleaned from existing IFSF and Conexus Standards
 - Definitions are beginning to be used in multiple APIs

Process

- Definitions proposed for promotion to the dictionary by
 - Individual WGs
 - External organizations
- Joint API WG reviews and approves, or not
- If approved
 - Conexus TAC and IFSF Project Management review
 - If approved, new items are moved to standards

What can we do immediately (Q1)?

For the dictionary

- Promote visibility – [standard](#) and [work in progress](#)
- Review and improve descriptions
- Continue process focus on documentation
- Leverage Continuous Integration / Continuous Deployment
 - Implement hierarchical naming in the documentation
 - Create cross reference documents
- Retrofit use case documents with new normalized format

What do we plan for the rest 2024?

- Dictionary Indexing:
 - Recognize things that should be referenced in a design
 - Recognize things in a design that might be promoted to the dictionary
 - Allow an IDE (e.g., VS Code) to provide support through a "CoPilot"
- Testing:
 - Train LLM to construct Scriptbook from:
 - Use cases
 - Sequence diagrams
 - Data dictionary terms
 - Train LLM to construct from Scriptbook:
 - Natural language test scripts
 - OAS files and examples
 - Node.js code stubs (server), Postman scripts (client)
- Definitions and Documents:
 - Normalizing naming and references



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Thank you
Any questions