La qualité des données

Un objectif atteignable ?

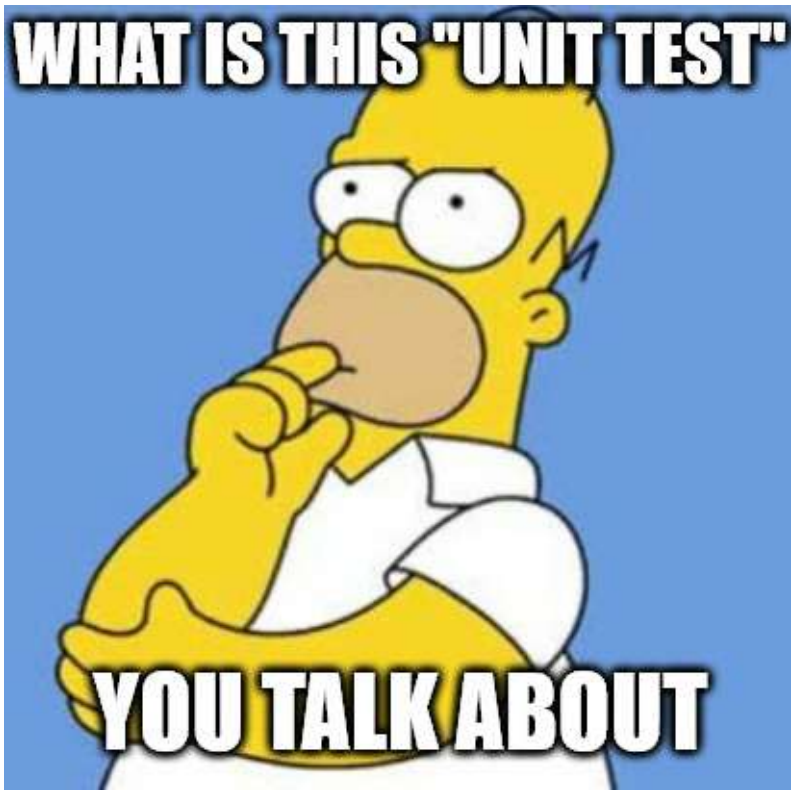
Sherif Behna

Architecte Logiciel et de Données

Hikari Data inc.

Les deux solitudes

Développement logiciel



BI / Analytics / Data Science

Qualité des données

Une (douce) introduction…

Les données : La ressource stratégique du 21e siècle ?

CIO

Data: The oil of the 21st Century

BrandPost • By Phil Dawson
Mar 25, 2022

Cloud Security | IT Leadership

Credit: metamorworks/tsrock

If there was any doubt that the trend towards globalisation had decelerated, the emergence of COVID-19 has put that to rest. The shift towards more inward-looking policy settings around the globe, has been emboldened by the COVID-19 pandemic.

towards data science

ARTIFICIAL INTELLIGENCE

Is Data Really the New Oil in the 21st Century?

Exploring the strengths and limitations of this metaphor in the information age.

Amol Mavuduru
Dec 12, 2020 • 11 min read

Photo by Robin Sommer on Unsplash

Forbes

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INNOVATION

The Strategic Value Of Data Infrastructure In R&D

By Akshay Talekar, Forbes Councils Member.
for Forbes Technology Council, COUNCIL POST | Membership (fee-based)

Published Aug 11, 2025, 10:15am EDT

Share Save

Akshay Talekar, Lead Data Scientist at UL Research Institutes.

GETTY

Pourquoi on a besoin de données ?

- Pour prendre des décisions éclairées
- Pour trouver des solutions à un problème
- Pour mieux comprendre un phénomène
- Pour optimiser un processus

Utilisation des données

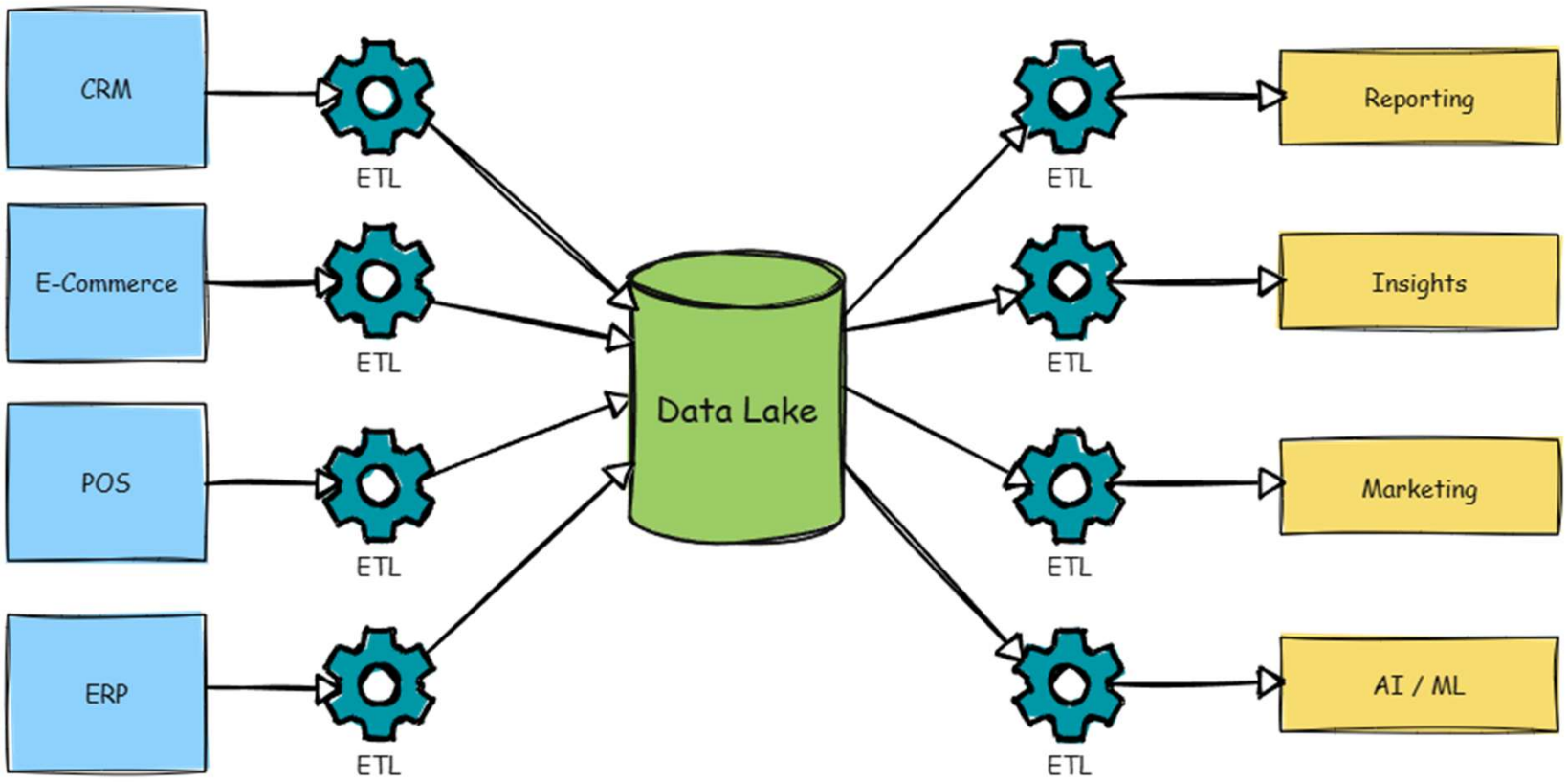
RAPPORTS

ANALYTICS

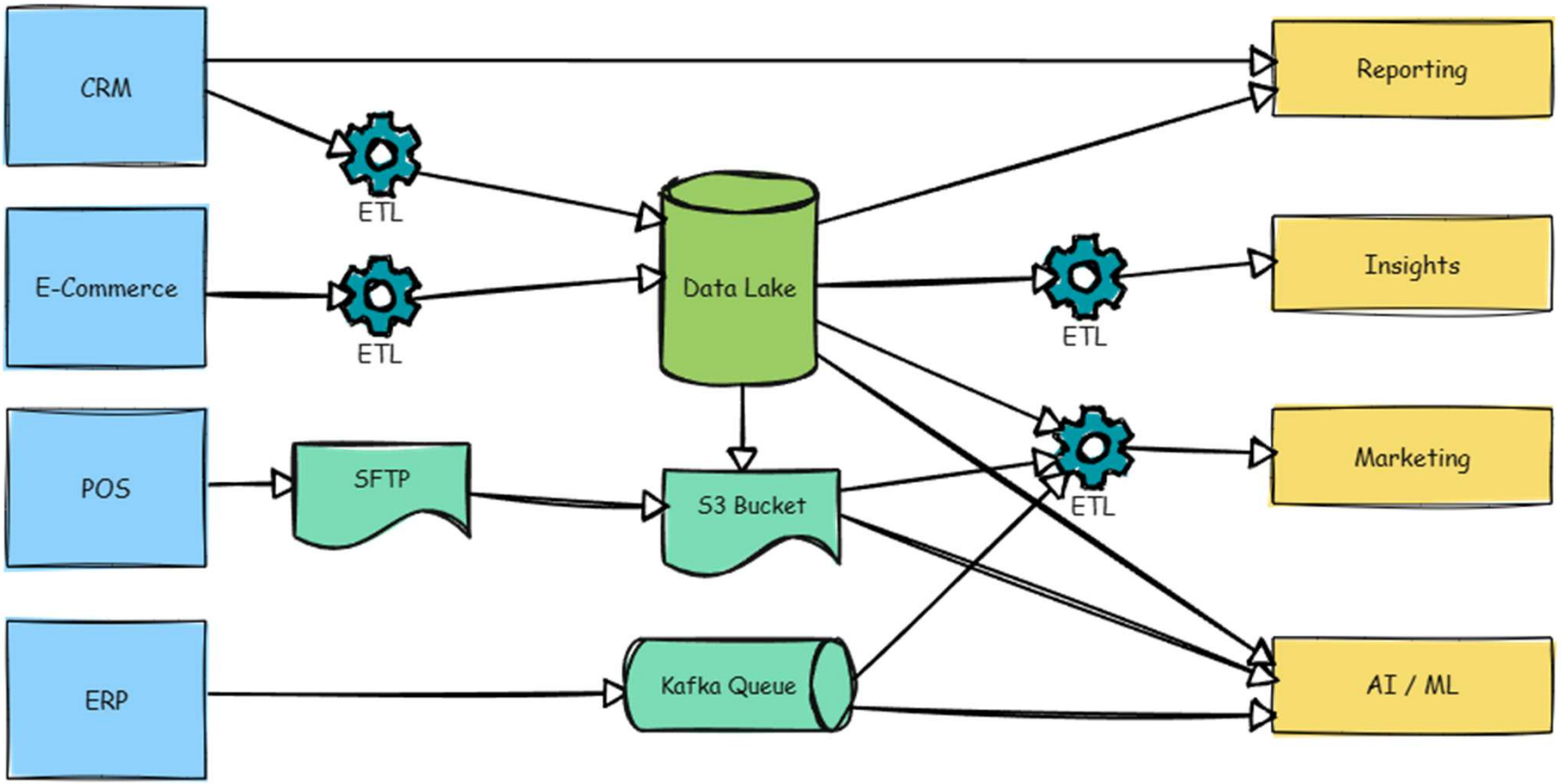
ALIMENTER UNE AUTRE APPLICATION

ML / AI

L’architecture de données idéalisée



La vraie vie...


CRM
E-Commerce
POS
ERP
ETL
ETL
SFTP
Data Lake
S3 Bucket
Kafka Queue
ETL
ETL
Reporting
Insights
Marketing
AI / ML

Les problèmes de qualité de données

Jeu de données

pickup_date	pickup_time	dropoff_date	dropoff_time	psg_count	distance	rate_id	pu_loc_id	do_loc_id	fare
2025-01-30	18:55	2025-01-30	19:00	1	1,06	1	2	2	7,9
2025-01-30	18:55	2025-01-30	19:00	1	1,06	3	2	2	11,4
2025-03-23	21:32	2025-03-27	21:27	1	3,36	1	1	2	18,4
2025-04-07	13:14	2025-04-07	13:25	1	0,42	1	3	5	10
2025-04-10	10:28	2025-04-10	10:51	1	4,71		4	1	34,99
2025-04-12	18:40	2025-04-12	19:05	1	7,02	1	1	1	32,4
2025-05-06	16:11	2025-05-06	16:27	1	0		2	1	
2025-05-09	22:16	2025-05-09	15:58	1	2,07	2	6	2	14,2
05/17/2025	0h15	2025-05-17	00:20	1	140,32		1	1	13,79
2025-06-18	07:46	2025-06-18	07:58	1	1,77	1	2	3	13,5

Les problèmes de qualité de données

Format de données invalide

pickup_date	pickup_time	dropoff_date	dropoff_time	psg_count	distance	rate_id	pu_loc_id	do_loc_id	fare
2025-01-30	18:55	2025-01-30	19:00	1	1,06	1	2	2	7,9
2025-01-30	18:55	2025-01-30	19:00	1	1,06	3	2	2	11,4
2025-03-23	21:32	2025-03-27	21:27	1	3,36	1	1	2	18,4
2025-04-07	13:14	2025-04-07	13:25	1	0,42	1	3	5	10
2025-04-10	10:28	2025-04-10	10:51	1	4,71		4	1	34,99
2025-04-12	18:40	2025-04-12	19:05	1	7,02	1	1	1	32,4
2025-05-06	16:11	2025-05-06	16:27	1	0		2	1	
2025-05-09	22:16	2025-05-09	15:58	1	2,07	2	6	2	14,2
05/17/2025	0h15	2025-05-17	00:20	1	140,32		1	1	13,79
2025-06-18	07:46	2025-06-18	07:58	1	1,77	1	2	3	13,5

Les problèmes de qualité de données

Données incomplètes (valeurs manquantes)

pickup_date	pickup_time	dropoff_date	dropoff_time	psg_count	distance	rate_id	pu_loc_id	do_loc_id	fare
2025-01-30	18:55	2025-01-30	19:00	1	1,06	1	2	2	7,9
2025-01-30	18:55	2025-01-30	19:00	1	1,06	3	2	2	11,4
2025-03-23	21:32	2025-03-27	21:27	1	3,36	1	1	2	18,4
2025-04-07	13:14	2025-04-07	13:25	1	0,42	1	3	5	10
2025-04-10	10:28	2025-04-10	10:51	1	4,71		4	1	34,99
2025-04-12	18:40	2025-04-12	19:05	1	7,02	1	1	1	32,4
2025-05-06	16:11	2025-05-06	16:27	1	0		2	1	
2025-05-09	22:16	2025-05-09	15:58	1	2,07	2	6	2	14,2
05/17/2025	0h15	2025-05-17	00:20	1	140,32		1	1	13,79
2025-06-18	07:46	2025-06-18	07:58	1	1,77	1	2	3	13,5

Les problèmes de qualité de données

Données irréalistes

pickup_date	pickup_time	dropoff_date	dropoff_time	psg_count	distance	rate_id	pu_loc_id	do_loc_id	fare
2025-01-30	18:55	2025-01-30	19:00	1	1,06	1	2	2	7,9
2025-01-30	18:55	2025-01-30	19:00	1	1,06	3	2	2	11,4
2025-03-23	21:32	2025-03-27	21:27	1	3,36	1	1	2	18,4
2025-04-07	13:14	2025-04-07	13:25	1	0,42	1	3	5	10
2025-04-10	10:28	2025-04-10	10:51	1	4,71		4	1	34,99
2025-04-12	18:40	2025-04-12	19:05	1	7,02	1	1	1	32,4
2025-05-06	16:11	2025-05-06	16:27	1	0		2	1	
2025-05-09	22:16	2025-05-09	15:58	1	2,07	2	6	2	14,2
05/17/2025	0h15	2025-05-17	00:20	1	140,32		1	1	13,79
2025-06-18	07:46	2025-06-18	07:58	1	1,77	1	2	3	13,5

Les problèmes de qualité de données

Données incohérentes

pickup_date	pickup_time	dropoff_date	dropoff_time	psg_count	distance	rate_id	pu_loc_id	do_loc_id	fare
2025-01-30	18:55	2025-01-30	19:00	1	1,06	1	2	2	7,9
2025-01-30	18:55	2025-01-30	19:00	1	1,06	3	2	2	11,4
2025-03-23	21:32	2025-03-27	21:27	1	3,36	1	1	2	18,4
2025-04-07	13:14	2025-04-07	13:25	1	0,42	1	3	5	10
2025-04-10	10:28	2025-04-10	10:51	1	4,71		4	1	34,99
2025-04-12	18:40	2025-04-12	19:05	1	7,02	1	1	1	32,4
2025-05-06	16:11	2025-05-06	16:27	1	0		2	1	
2025-05-09	22:16	2025-05-09	15:58	1	2,07	2	6	2	14,2
05/17/2025	0h15	2025-05-17	00:20	1	140,32		1	1	13,79
2025-06-18	07:46	2025-06-18	07:58	1	1,77	1	2	3	13,5

Les problèmes de qualité de données

Données en double

pickup_date	pickup_time	dropoff_date	dropoff_time	psg_count	distance	rate_id	pu_loc_id	do_loc_id	fare
2025-01-30	18:55	2025-01-30	19:00	1	1,06	1	2	2	7,9
2025-01-30	18:55	2025-01-30	19:00	1	1,06	3	2	2	11,4
2025-03-23	21:32	2025-03-27	21:27	1	3,36	1	1	2	18,4
2025-04-07	13:14	2025-04-07	13:25	1	0,42	1	3	5	10
2025-04-10	10:28	2025-04-10	10:51	1	4,71		4	1	34,99
2025-04-12	18:40	2025-04-12	19:05	1	7,02	1	1	1	32,4
2025-05-06	16:11	2025-05-06	16:27	1	0		2	1	
2025-05-09	22:16	2025-05-09	15:58	1	2,07	2	6	2	14,2
05/17/2025	0h15	2025-05-17	00:20	1	140,32		1	1	13,79
2025-06-18	07:46	2025-06-18	07:58	1	1,77	1	2	3	13,5

Les problèmes de qualité de données

Données non crédibles

pickup_date	pickup_time	dropoff_date	dropoff_time	psg_count	distance	rate_id	pu_loc_id	do_loc_id	fare
2025-01-30	18:55	2025-01-30	19:00	1	1,06	1	2	2	7,9
2025-01-30	18:55	2025-01-30	19:00	1	1,06	3	2	2	11,4
2025-03-23	21:32	2025-03-27	21:27	1	3,36	1	1	2	18,4
2025-04-07	13:14	2025-04-07	13:25	1	0,42	1	3	5	10
2025-04-10	10:28	2025-04-10	10:51	1	4,71		4	1	34,99
2025-04-12	18:40	2025-04-12	19:05	1	7,02	1	1	1	32,4
2025-05-06	16:11	2025-05-06	16:27	1	0		2	1	
2025-05-09	22:16	2025-05-09	15:58	1	2,07	2	6	2	14,2
05/17/2025	0h15	2025-05-17	00:20	1	140,32		1	1	13,79
2025-06-18	07:46	2025-06-18	07:58	1	1,77	1	2	3	13,5

Les problèmes de qualité de données

Données non intègres

pickup_date	pickup_time	dropoff_time	psg_count	distance	pu_loc_id	do_loc_id	fare
2025-01-30	18:55	19:00	1	1,06	2	2	7,9
2025-01-30	18:55	19:00	1	1,06	2	2	11,4
2025-03-23	21:32	21:27	1	3,36	1	2	18,4
2025-04-07	13:14	13:25	1	0,42	3	5	10
2025-04-10	10:28	10:51	1	4,71	4	1	34,99
2025-04-12	18:40	19:05	1	7,02	1	1	32,4
2025-05-06	16:11	16:27	1	0	2	1	
2025-05-09	22:16	15:58	1	2,07	6	2	14,2
05/17/2025	0h15	00:20	1	140,32	1	1	13,79
2025-06-18	07:46	07:58	1	1,77	2	3	13,5

location_id	name
1	Manhattan
2	Queens
3	Brooklyn
4	Bronx
5	Staten Island

Les problèmes de qualité de données

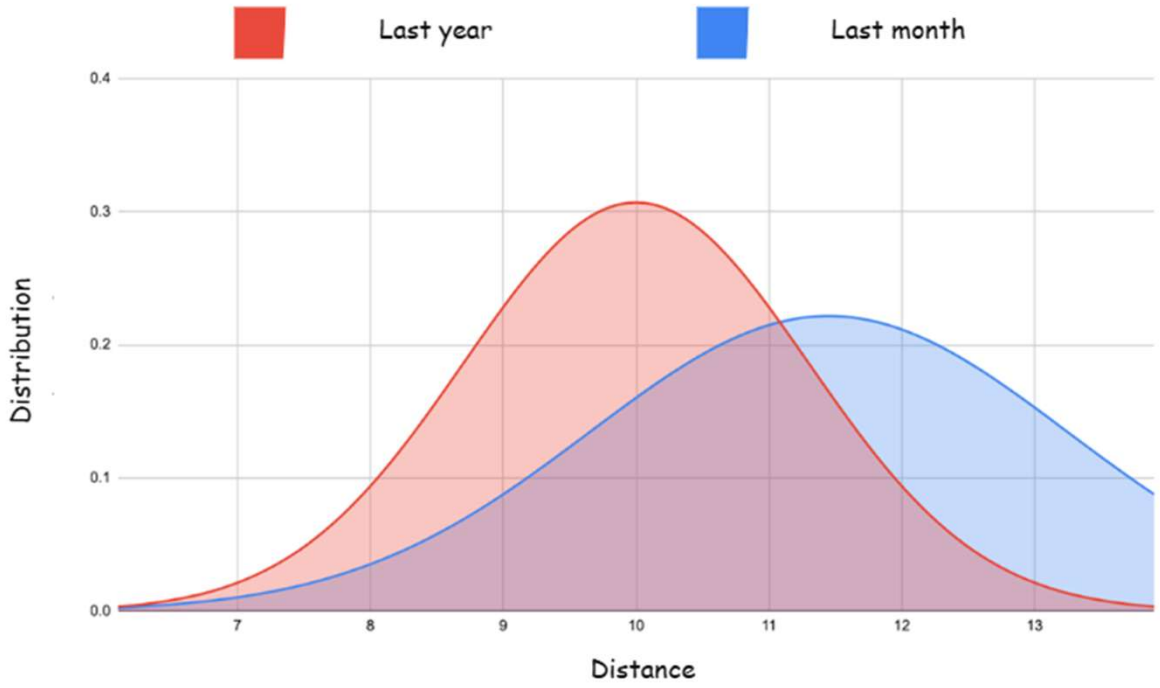
Données qui ne sont pas à jour (manque de fraîcheur)

pickup_date	pickup_time	dropoff_date	dropoff_time	psg_count	distance	rate_id	pu_loc_id	do_loc_id	pmt_type	fare
2025-01-30	18:55	2025-01-30	19:00	1	1,06	1	2	2	1	7,9
2025-01-30	18:55	2025-01-30	19:00	1	1,06	3	2	2	1	11,4
2025-03-23	21:32	2025-03-27	21:27	1	3,36	1	1	2	2	18,4
2025-04-07	13:14	2025-04-07	13:25	1	0,42	1	3	5	1	10
2025-04-10	10:28	2025-04-10	10:51	1	4,71		4	1	0	34,99
2025-04-12	18:40	2025-04-12	19:05	1	7,02	1	1	1	1	32,4
2025-05-06	16:11	2025-05-06	16:27	1	0		2	1	0	
2025-05-09	22:16	2025-05-09	15:58	1	2,07	2	6	2	1	14,2
05/17/2025	0h15	2025-05-17	00:20	1	140,32		1	1	0	13,79
2025-06-18	07:46	2025-06-18	07:58	1	1,77	1	2	3	1	13,5

Date actuelle : 2025-09-18

Les problèmes de qualité de données

Données biaisés (distribution)



Les problèmes de qualité de données

Données incompatibles

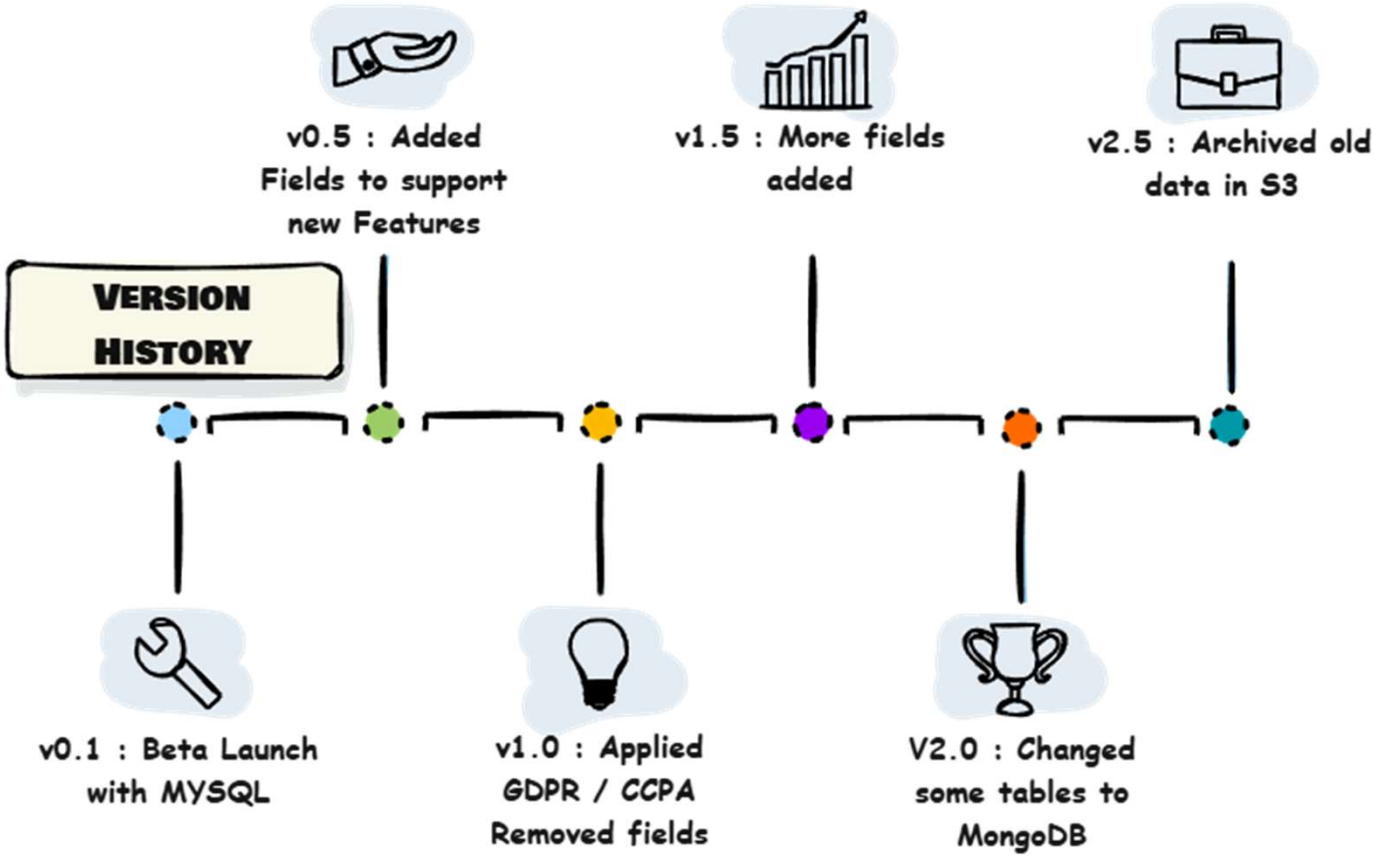
pickup_date	pickup_time	dropoff_date	dropoff_time	psg_count	distance	~~rate_id~~	pu_loc_id	do_loc_id	fare	toll
2025-01-30	18:55	2025-01-30	19:00	1	1,06		2	2	7,9	2,1
2025-01-30	18:55	2025-01-30	19:00	1	1,06		2	2	11,4	0
2025-03-23	21:32	2025-03-27	21:27	1	3,36		1	2	18,4	1,5
2025-04-07	13:14	2025-04-07	13:25	1	0,42		3	5	10	2,25
2025-04-10	10:28	2025-04-10	10:51	1	4,71		4	1	34,99	0
2025-04-12	18:40	2025-04-12	19:05	1	7,02		1	1	32,4	1,98
2025-05-06	16:11	2025-05-06	16:27	1	0		2	1		
2025-05-09	22:16	2025-05-09	15:58	1	2,07		6	2	14,2	2,25
05/17/2025	0h15	2025-05-17	00:20	1	140,32		1	1	13,79	0
2025-06-18	07:46	2025-06-18	07:58	1	1,77		2	3	13,5	3,5

Les problèmes de qualité de données

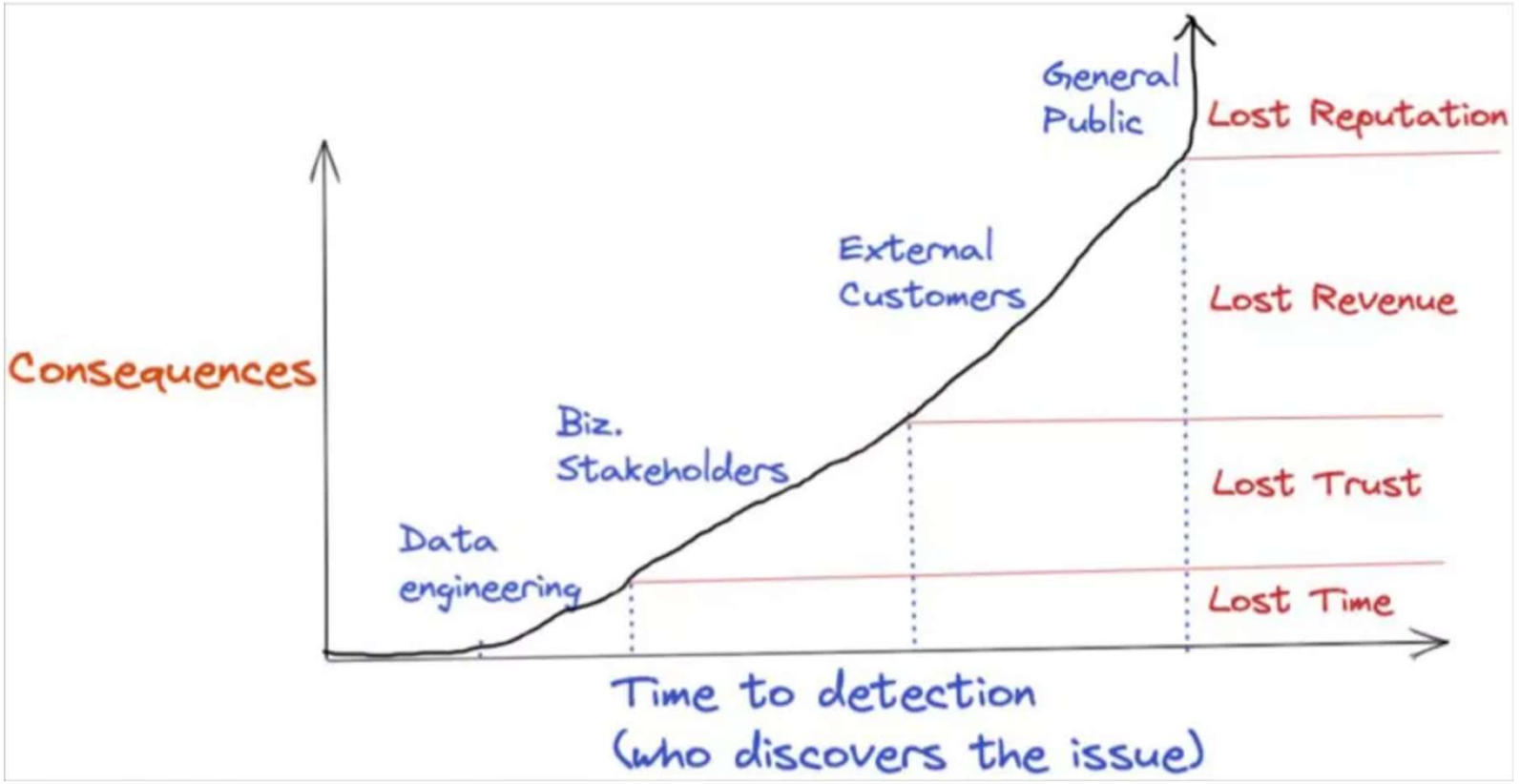
Fuite de renseignements personnels

pickup_date	pickup_time	dropoff_date	dropoff_time	psg_count	distance	pu_loc_id	do_loc_id	fare	comment
2025-01-30	18:55	2025-01-30	19:00	1	1,06	2	2	7,9	Premium customer
2025-01-30	18:55	2025-01-30	19:00	1	1,06	2	2	11,4	
2025-03-23	21:32	2025-03-27	21:27	1	3,36	1	2	18,4	
2025-04-07	13:14	2025-04-07	13:25	1	0,42	3	5	10	Drop off at 20 W. 34th st.
2025-04-10	10:28	2025-04-10	10:51	1	4,71	4	1	34,99	
2025-04-12	18:40	2025-04-12	19:05	1	7,02	1	1	32,4	
2025-05-06	16:11	2025-05-06	16:27	1	0	2	1		
2025-05-09	22:16	2025-05-09	15:58	1	2,07	6	2	14,2	Zip code : 10001
05/17/2025	0h15	2025-05-17	00:20	1	140,32	1	1	13,79	
2025-06-18	07:46	2025-06-18	07:58	1	1,77	2	3	13,5	

Qualité variable selon le temps



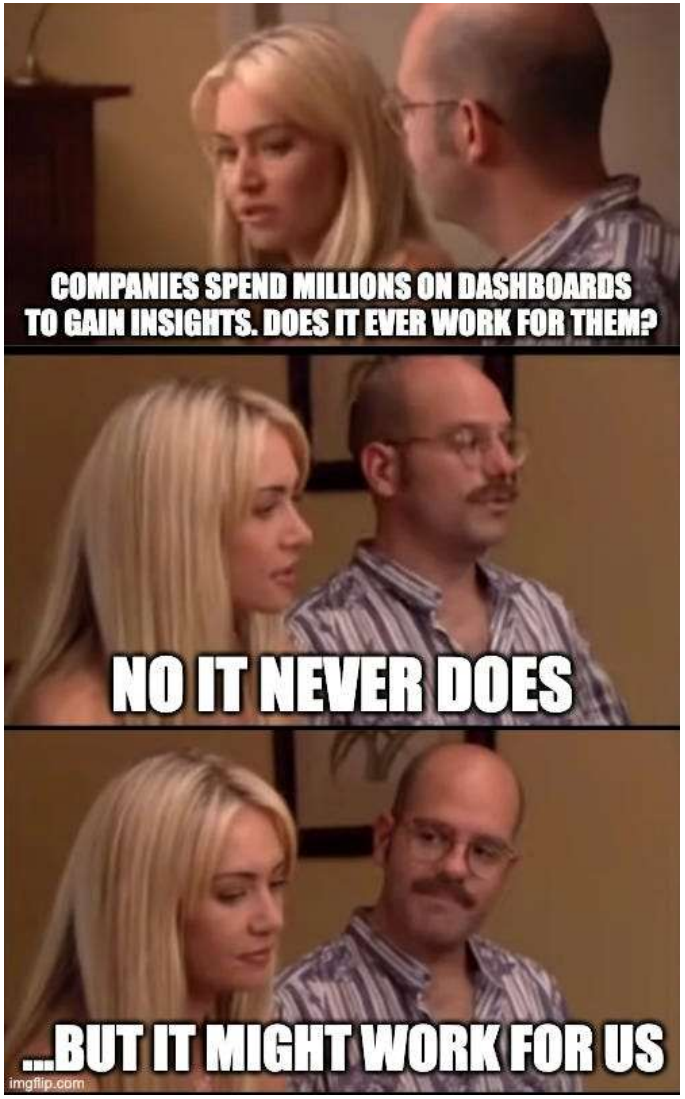
Pourquoi c’est important



Les projets d’exploitation de données sont voués à l’échec ?

Taux élevé d’échec dans les projets de données

60% des projets seraient voués à l’échec (Gartner - 2015)



Les conséquences…

Zillow’s home-buying debacle shows how hard it is to use AI to value real estate

By Rachel Metz, CNN Business

7 minute read · Published 7:32 AM EST, Tue November 9, 2021

The decision, announced last week, marks a stunning defeat for Zillow. The real estate listing company took a $304 million inventory write-down in the third quarter, which it blamed on having recently purchased homes for prices that are higher than it thinks it can sell them. The company saw its stock plunge and it now plans to cut 2,000 jobs, or 25% of its staff.

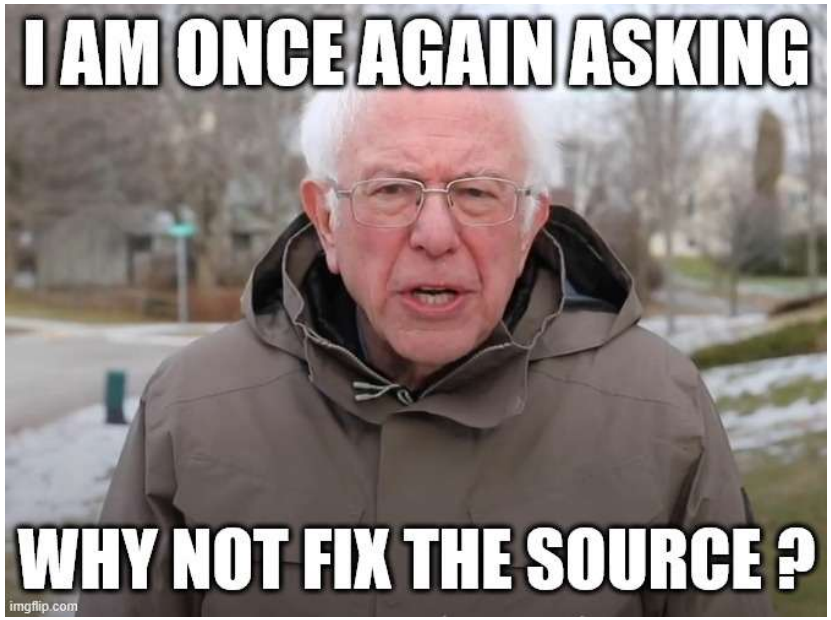
https://edition.cnn.com/2021/11/09/tech/zillow-ibuying-home-zestimate/index.html

Causes profondes

- Les données en tant qu'externalité (« byproduct »)
- Les producteurs et consommateurs travaillent en silo
- Les attentes envers les données ne sont pas explicites
- Manque d'approches pro-actives pour assurer la qualité des données
- Pas de responsabilité sur les données produites (manque de « ownership »)

Pourquoi ne pas tout régler à la source ?

- Oui, idéalement, c’est ce qu’on veut… mais comment faire ?
- La qualité est une question d’**attentes**…
  - Les attentes **varient** en fonction du **use case**



Data burn out ?

Search

All / Business Administration / **Data Analysis**

What do you do if your team members are experiencing burnout?

Powered by AI and the LinkedIn community

1 Recognize Signs

SeattleDataGuy's Newsletter

Beyond The Hype: Data Teams Have A Burnout Problem

And Five Tactics On How You Can Keep It At Bay

SEATTLEDATAGUY
FEB 21, 2025

DATA ENGINEERING

How to Avoid Burnout as a Data Engineer

By: Chris Garzon | March 6, 2025 | 13 mins read

Pistes de solution

Profilage des données

Exploration des données (EDA)

Exploration / Profilage des données

Overview | Alerts 17 | Reproduction

Dataset statistics

Number of variables	20
Number of observations	2409114
Missing cells	2708500
Missing cells (%)	5.6%
Duplicate rows	0
Duplicate rows (%)	0.0%
Total size in memory	358.4 MiB
Average record size in memory	156.0 B

Variable types

Categorical	5
DateTime	2
Numeric	12
Boolean	1

YData

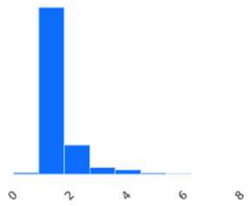
Exploration / Profilage des données

passenger_count

Real number (ℝ)

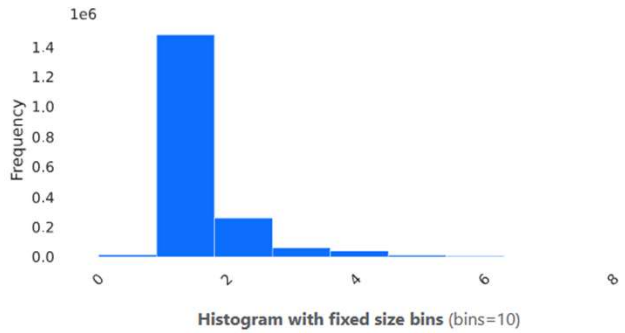
Missing

Distinct	10	**Minimum**	0
Distinct (%)	< 0.1%	**Maximum**	9
Missing	541700	**Zeros**	13898
Missing (%)	22.5%	**Zeros (%)**	0.6%
Infinite	0	**Negative**	0
Infinite (%)	0.0%	**Negative (%)**	0.0%
Mean	1.2956484	**Memory size**	36.8 MiB



More details

Statistics | Histogram | Common values | Extreme values



Histogram with fixed size bins (bins=10)

YData

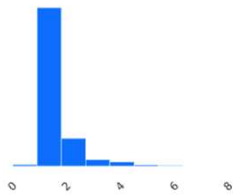
Exploration / Profilage des données

passenger_count

Real number (ℝ)

Missing

Distinct	10	**Minimum**	0
Distinct (%)	< 0.1%	**Maximum**	9
Missing	541700	**Zeros**	13898
Missing (%)	22.5%	**Zeros (%)**	0.6%
Infinite	0	**Negative**	0
Infinite (%)	0.0%	**Negative (%)**	0.0%
Mean	1.2956484	**Memory size**	36.8 MiB



More details

Statistics | Histogram | Common values | Extreme values

Minimum 10 values | Maximum 10 values

Value	Count	Frequency (%)
9	1	< 0.1%
8	4	< 0.1%
7	3	< 0.1%
6	6074	0.3%
5	10473	0.4%
4	38728	1.6%

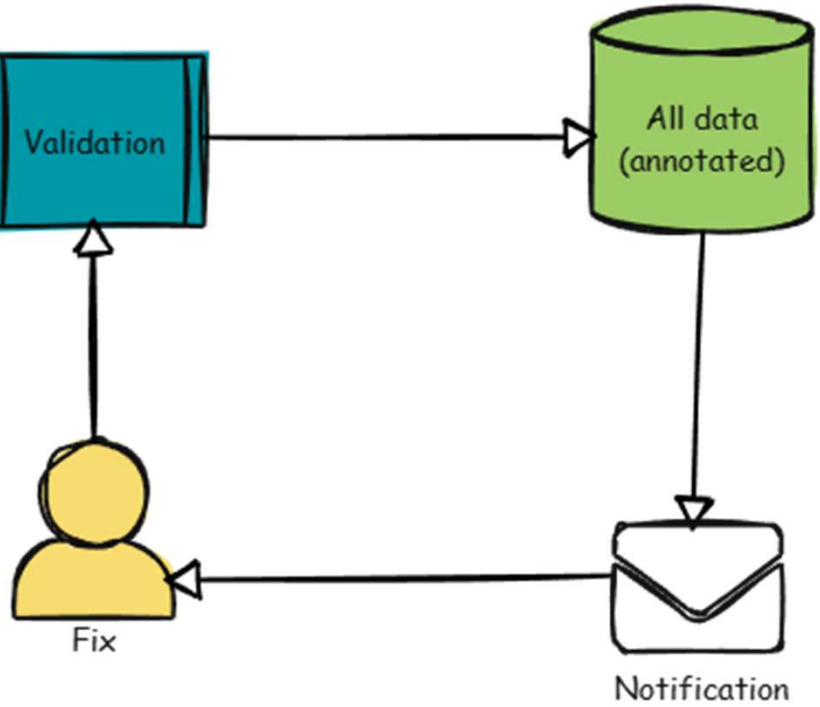
YData

Pistes de solution

Data Quality Checks

Data Quality Checks

Data Quality Checks – Annoter



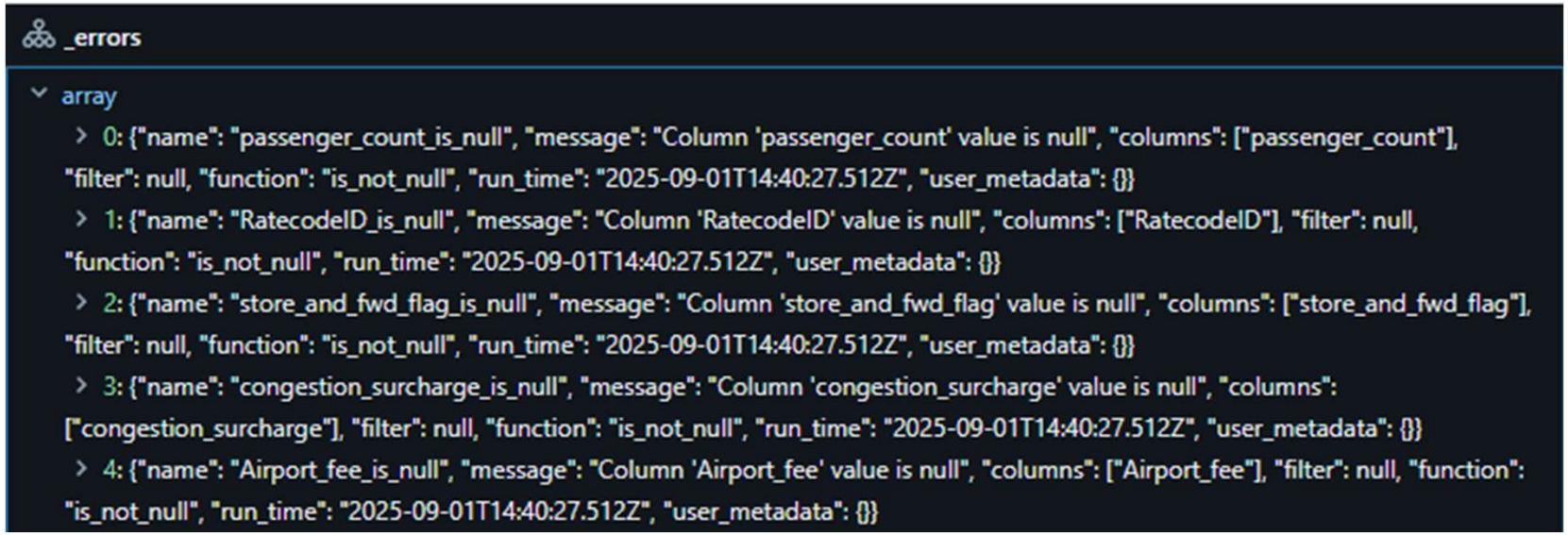
Data Quality Checks - DQX

```python
# passenger_count checks
DQRowRule(
    criticality="error",
    check_func=is_not_null,
    column="passenger_count",
    name="passenger_count_is_null"
),
DQRowRule(
    criticality="warn",
    check_func=is_in_range,
    column="passenger_count",
    check_func_kwargs={"min_limit": 1, "max_limit": 4},
    name="passenger_count_is_in_range"
),
```

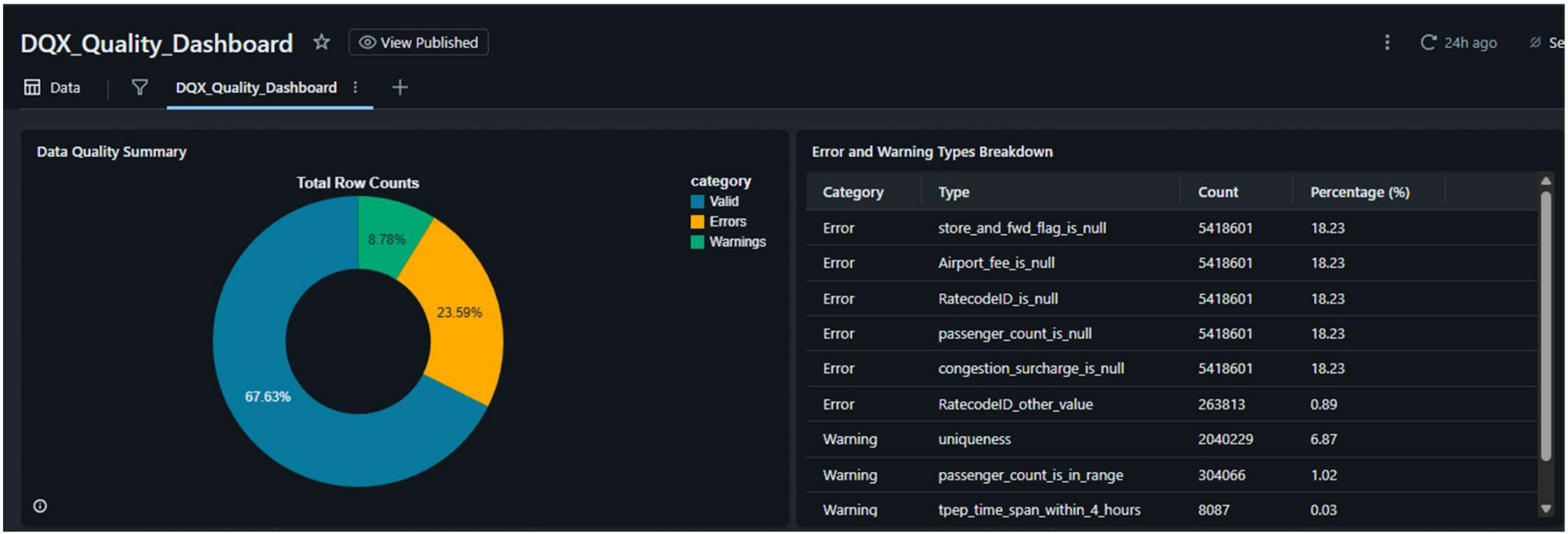
Data Quality Checks - DQX

```python
# dataset rules
DQDatasetRule(
    criticality="warn",
    check_func=is_unique,
    columns=["tpep_pickup_datetime", "PULocationID"],
    name="uniqueness"
),
DQDatasetRule(
    criticality="error",
    check_func=foreign_key,
    columns=["PULocationID"],
    check_func_kwargs={
        "ref_columns": ["LocationID"],
        "ref_df_name": "zone",
    },
    name="PULocationID_foreign_key"
),
```

Data Quality Checks - DQX



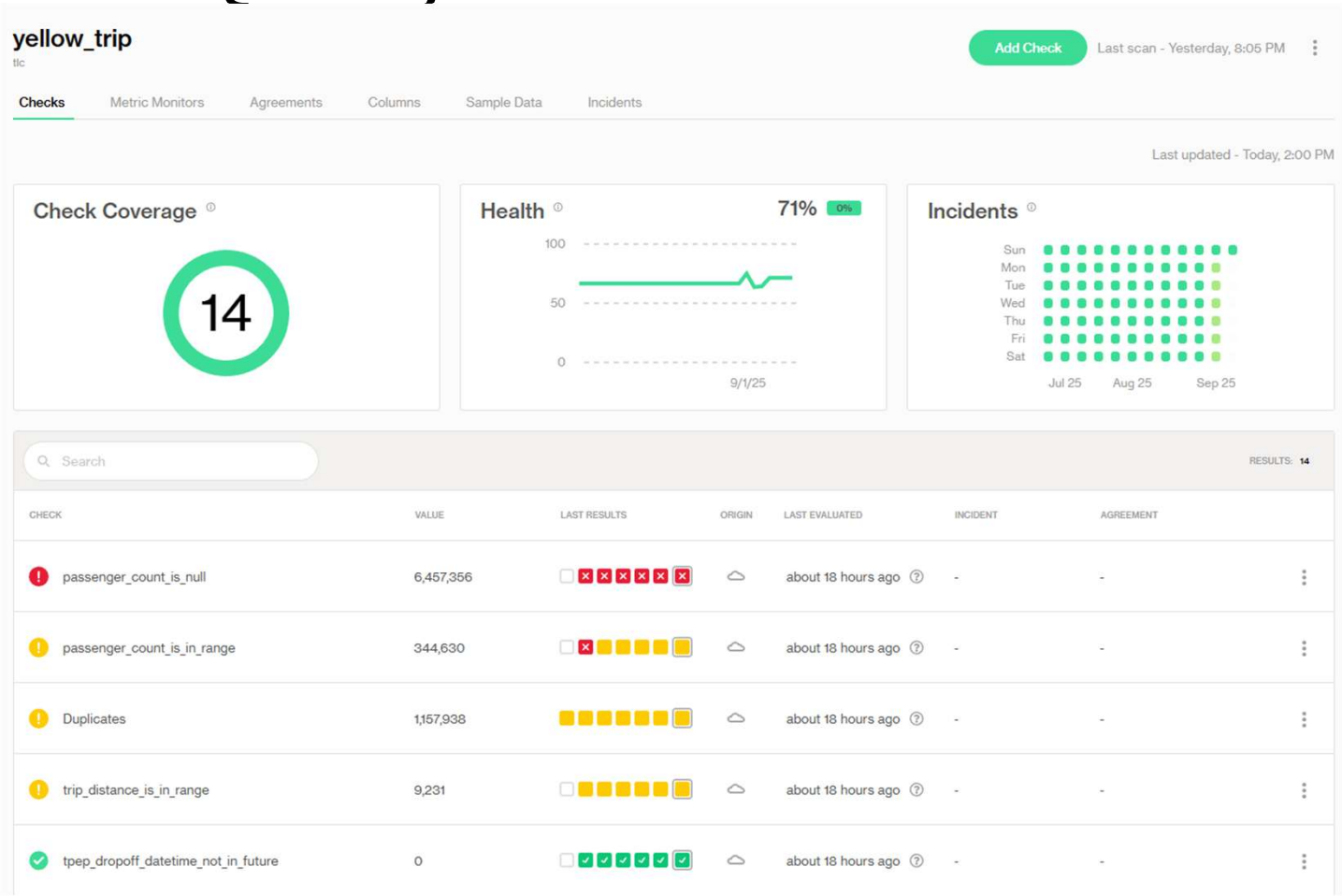
Data Quality Checks - DQX



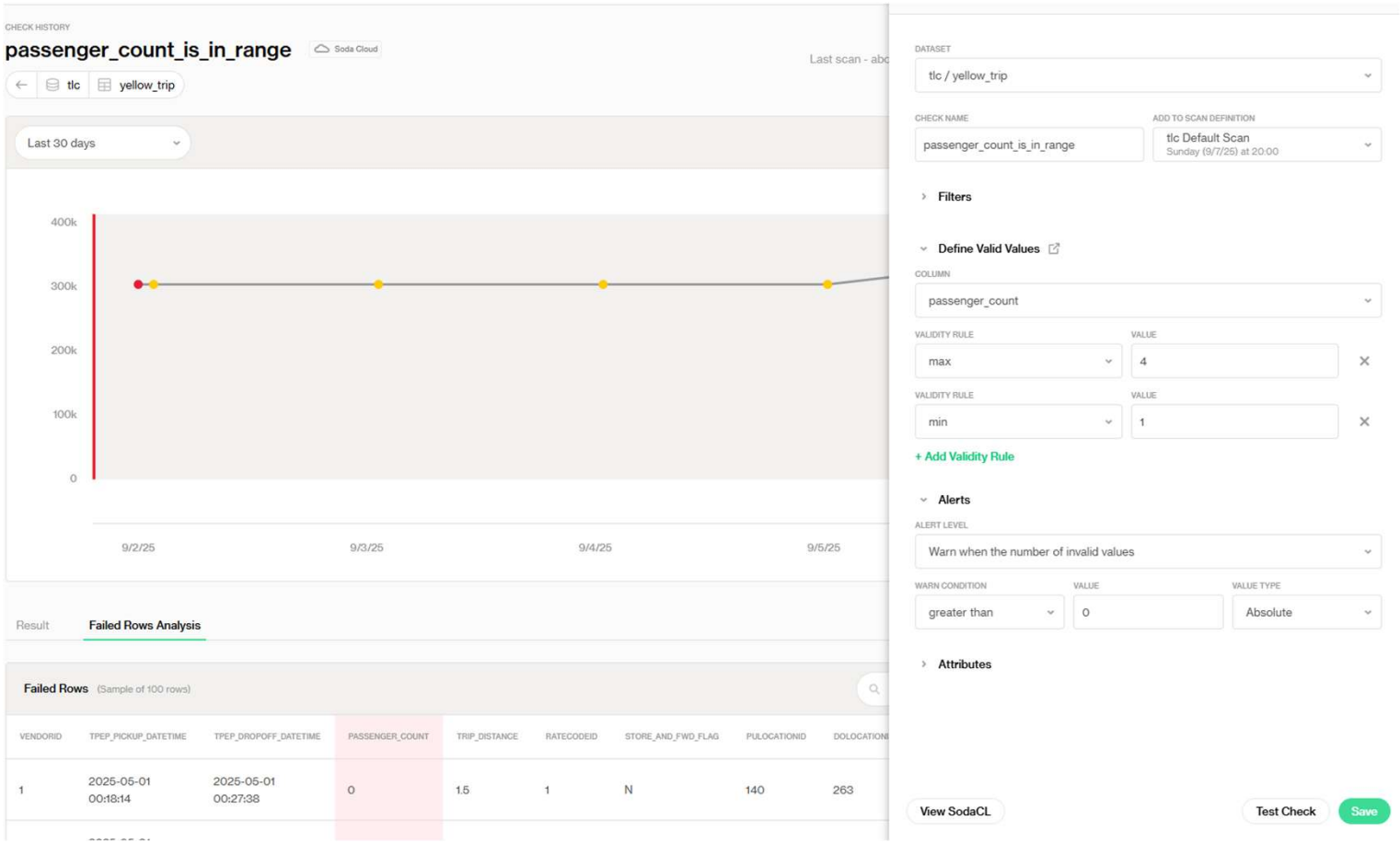
Category	Type	Count	Percentage (%)
Error	store_and_fwd_flag_is_null	5418601	18.23
Error	Airport_fee_is_null	5418601	18.23
Error	RatecodeID_is_null	5418601	18.23
Error	passenger_count_is_null	5418601	18.23
Error	congestion_surcharge_is_null	5418601	18.23
Error	RatecodeID_other_value	263813	0.89
Warning	uniqueness	2040229	6.87
Warning	passenger_count_is_in_range	304066	1.02
Warning	tpep_time_span_within_4_hours	8087	0.03

DQX – Data Quality Framework

Data Quality Checks - Soda

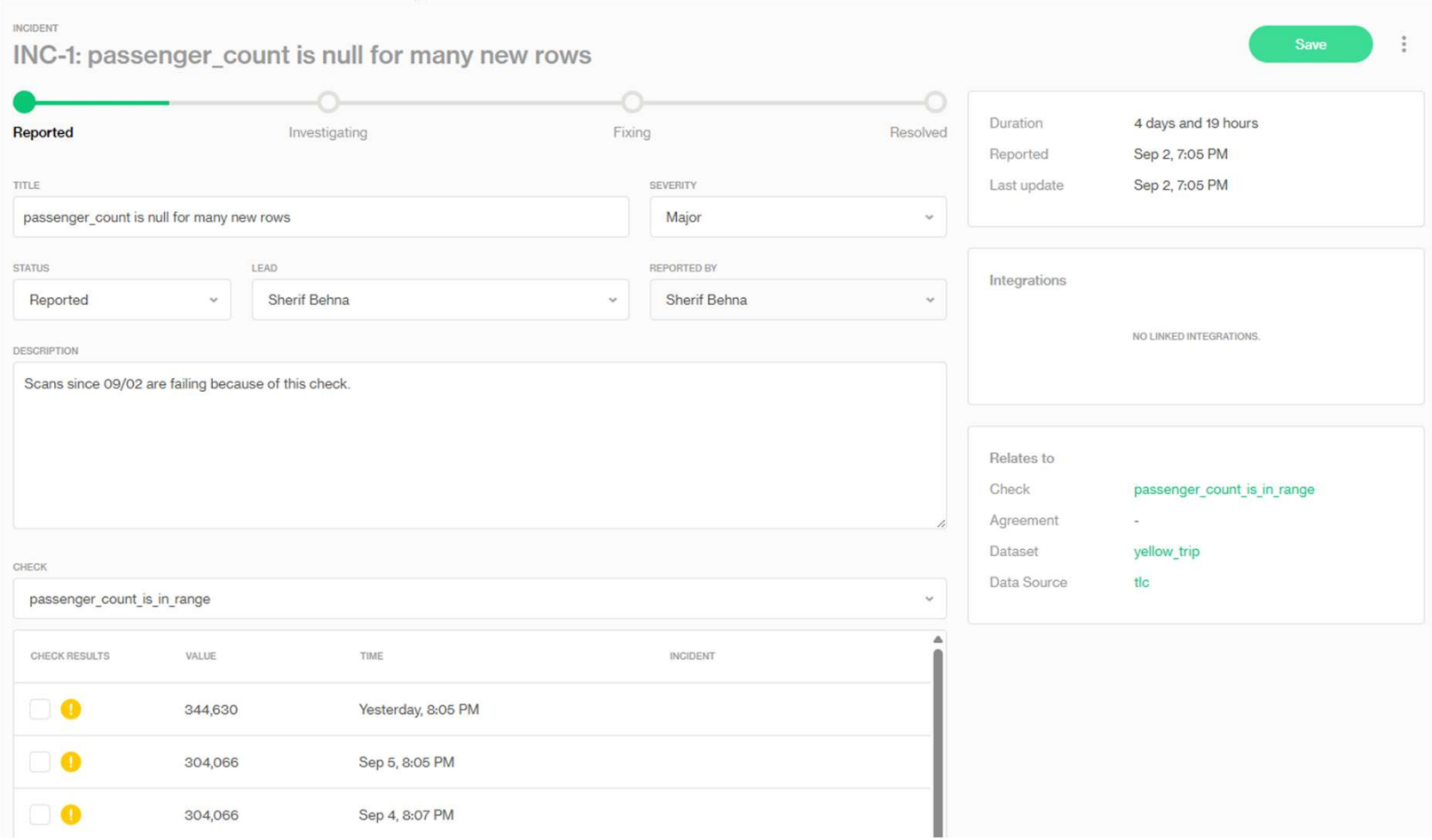


Data Quality Checks - Soda



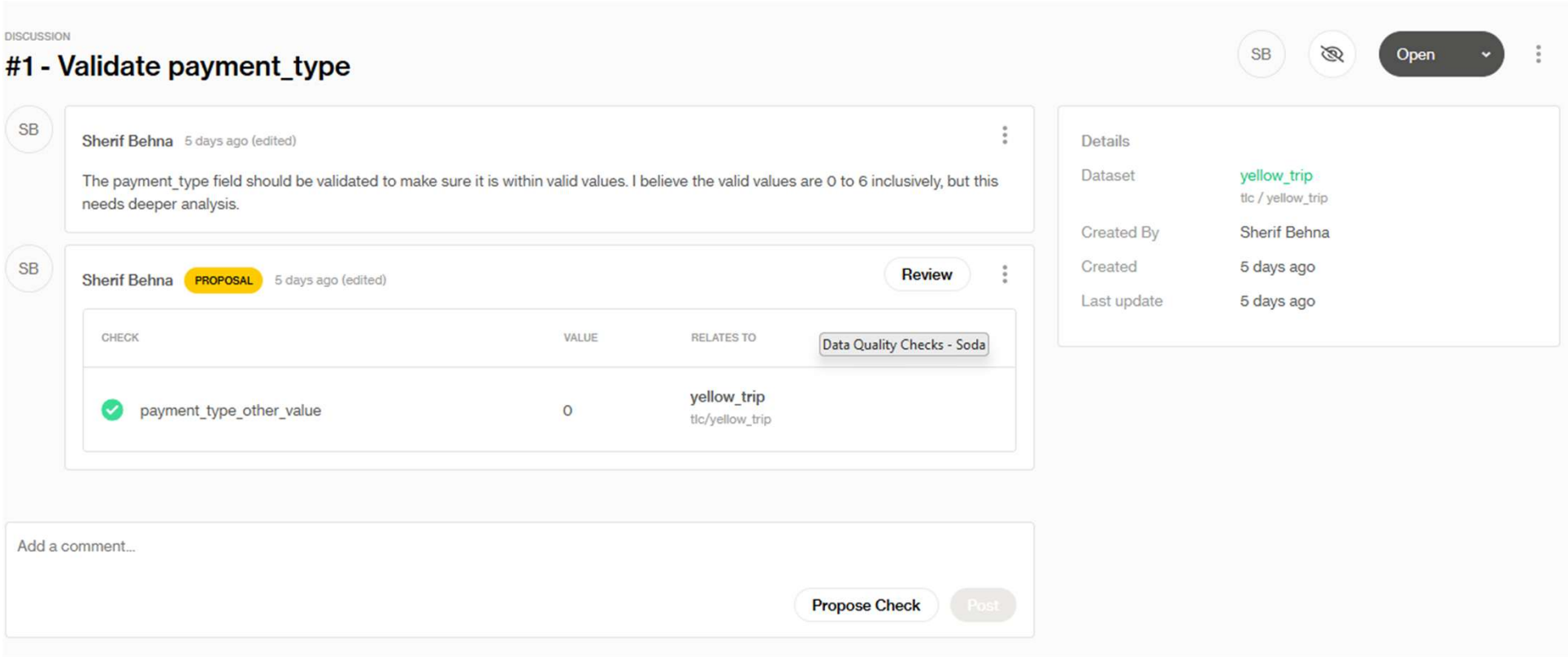
SODA

Data Quality Checks - Soda



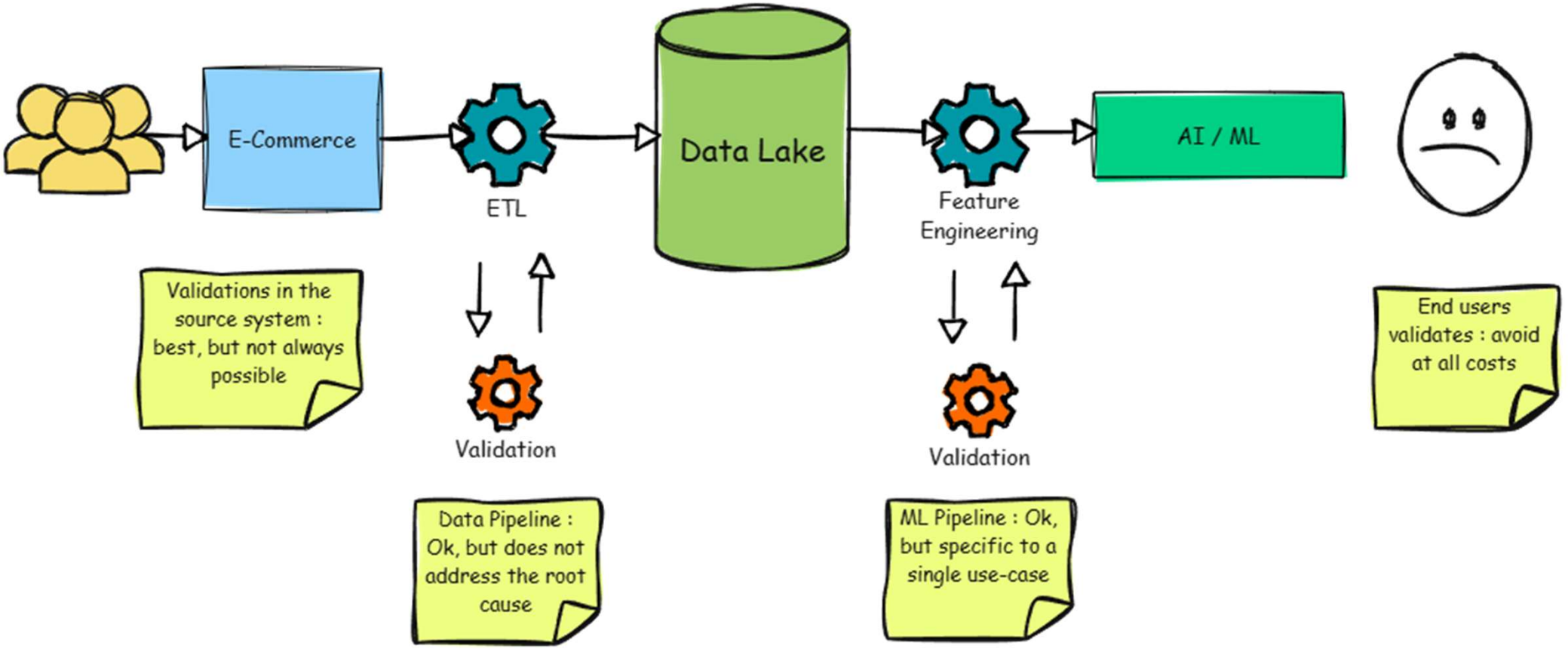
SODA

Data Quality Checks - Soda

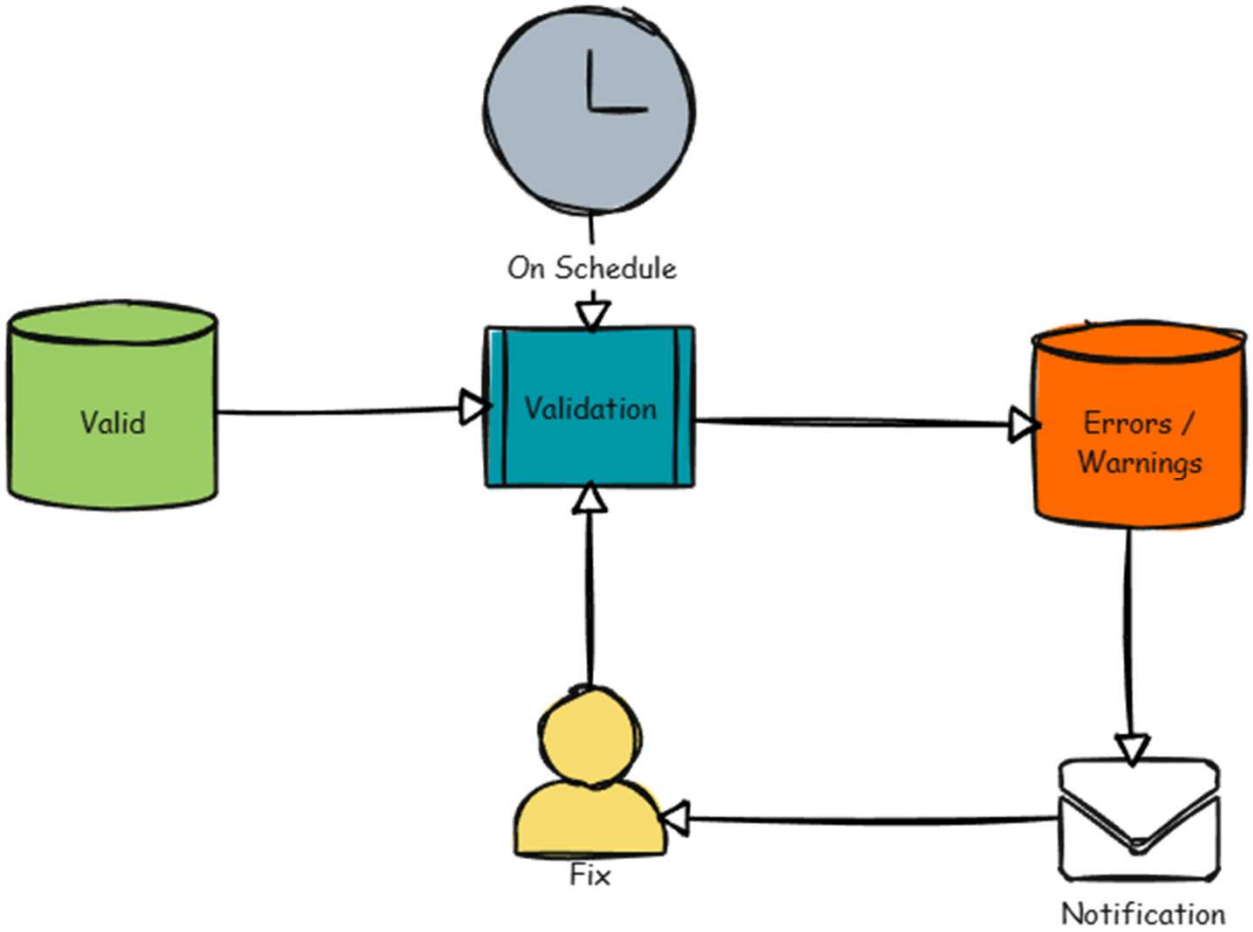


SODA

Data Quality Checks – Quand les appliquer ?



Data Quality Checks – Cédule



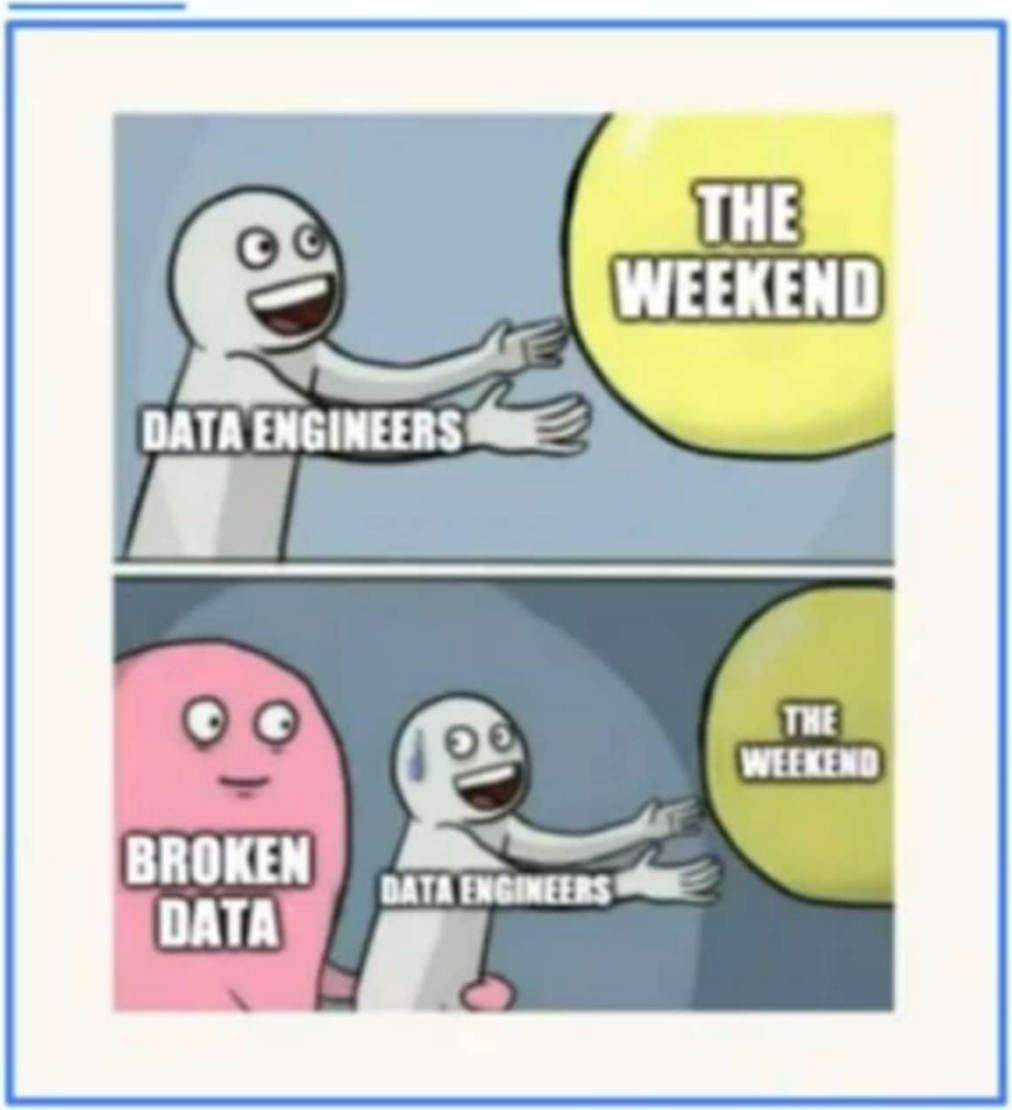
Pistes de solution

Data observability

Data observability

Data downtime

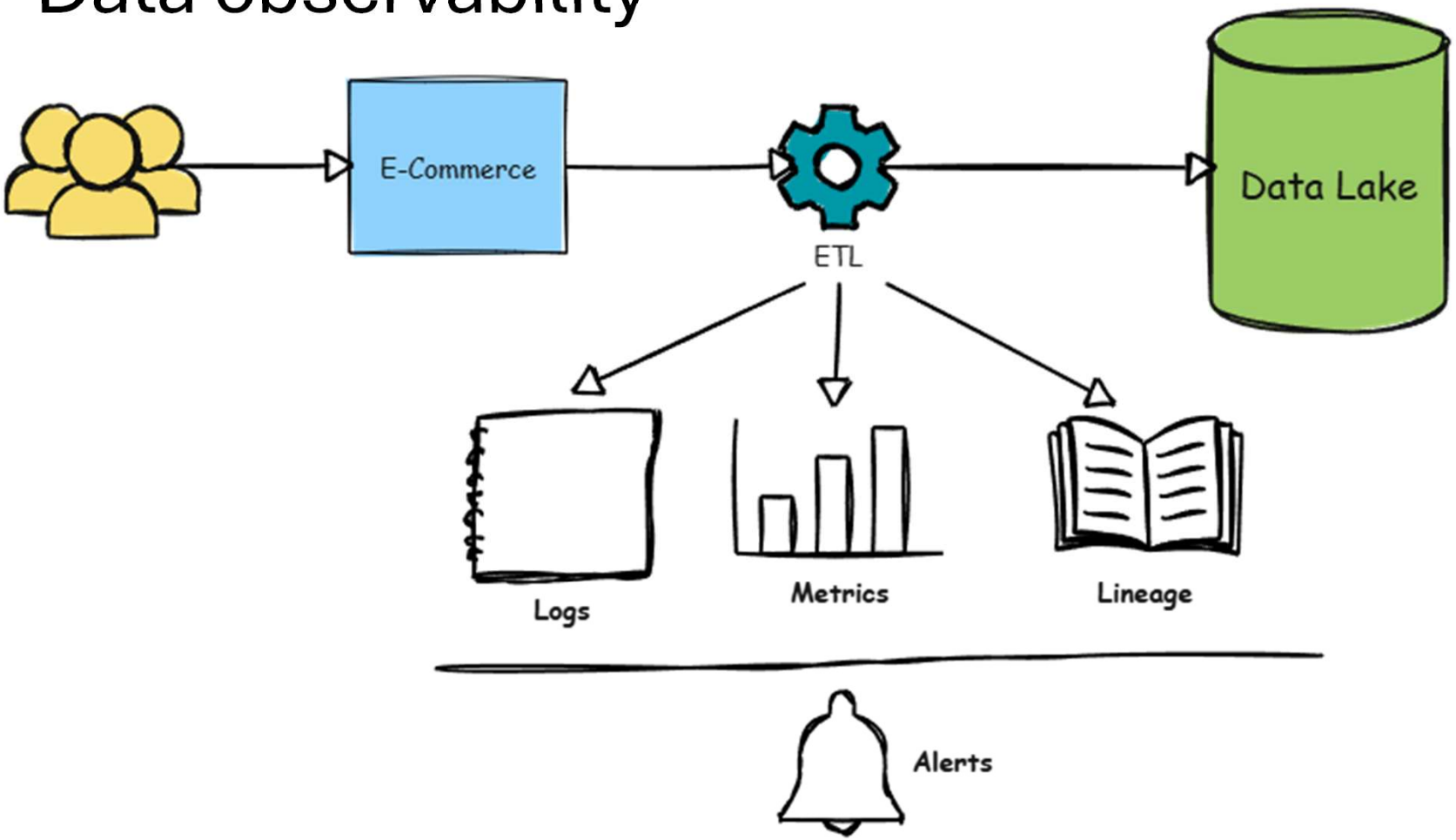
Périodes où les données sont partielles, erronées, manquantes, ou inexactes



Cinq piliers de l’observabilité

- Freshness
- Quality / Distribution
- Volume
- Schema
- Lineage

Data observability



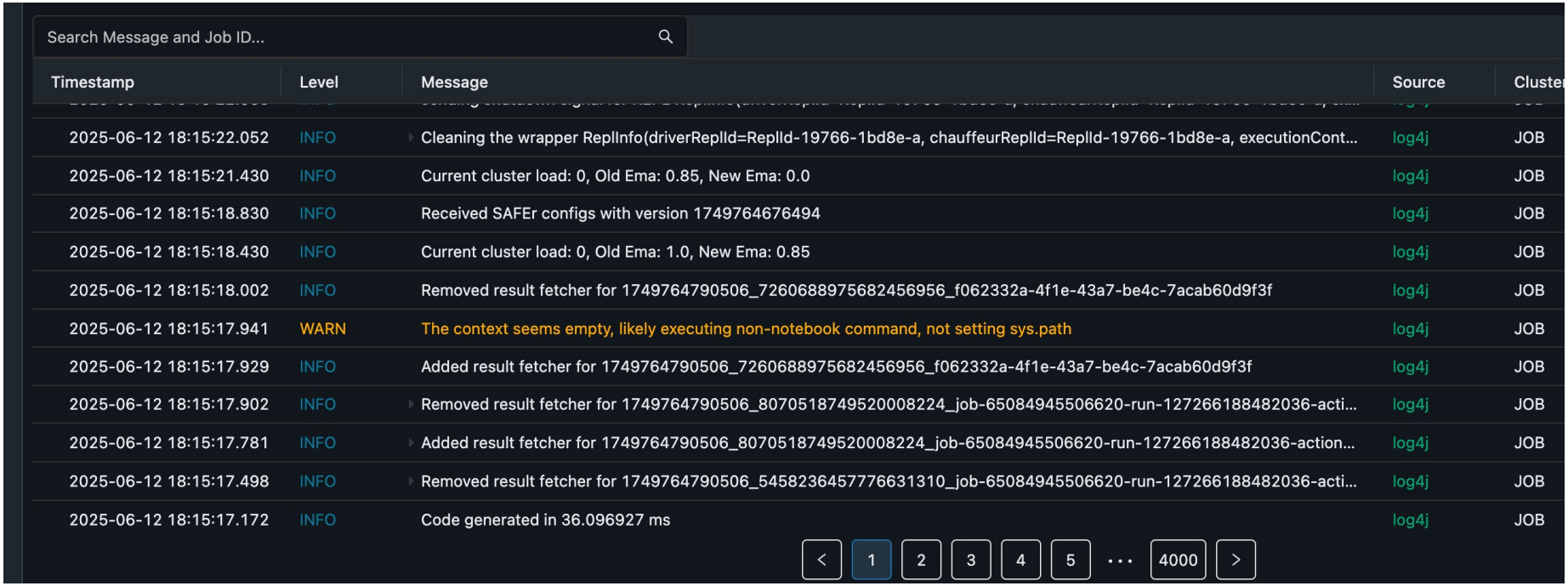
Data observability - Logs

```
print(f"transforming bronze -> silver. Got {num_rows} rows.") # ❌
```

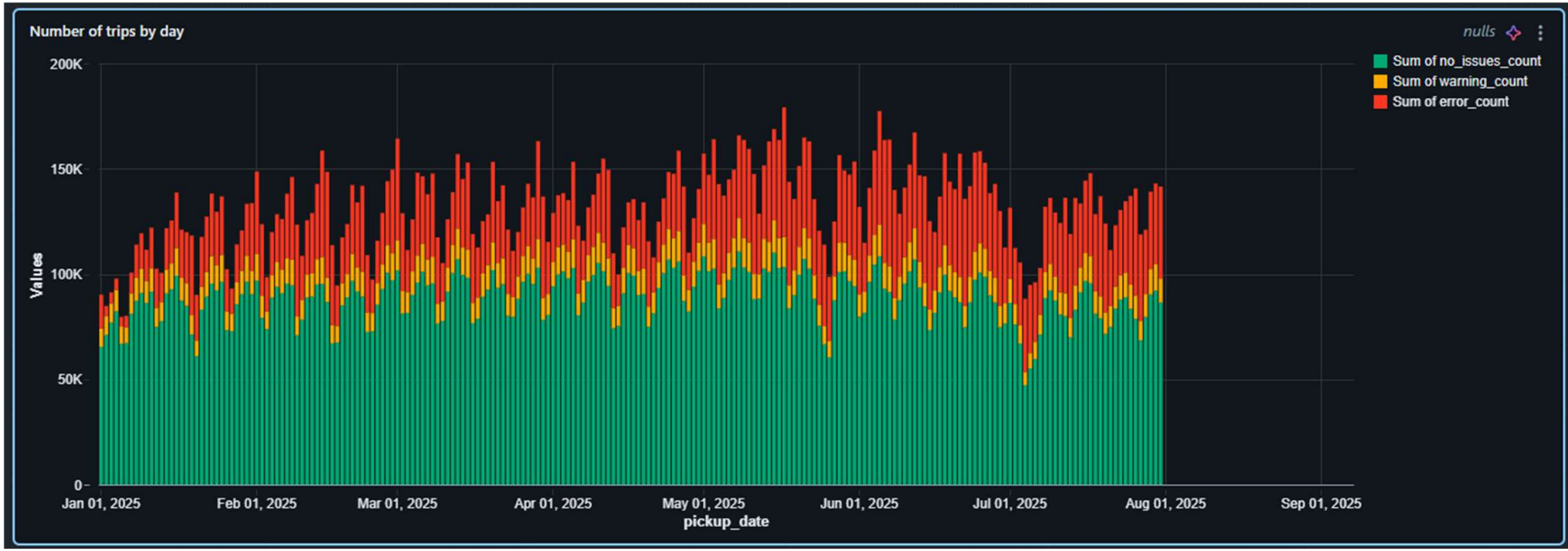
```
logger.debug("This is a debug message")
logger.info(f"This is an info message. x = {x}")
logger.warning("This is a warning message")

# Handle exceptions with logging.
try:
   raise RuntimeError("This is a runtime error")
except RuntimeError:
   logger.error("This is an error message", exc_info=True)
```

Data observability - Logs

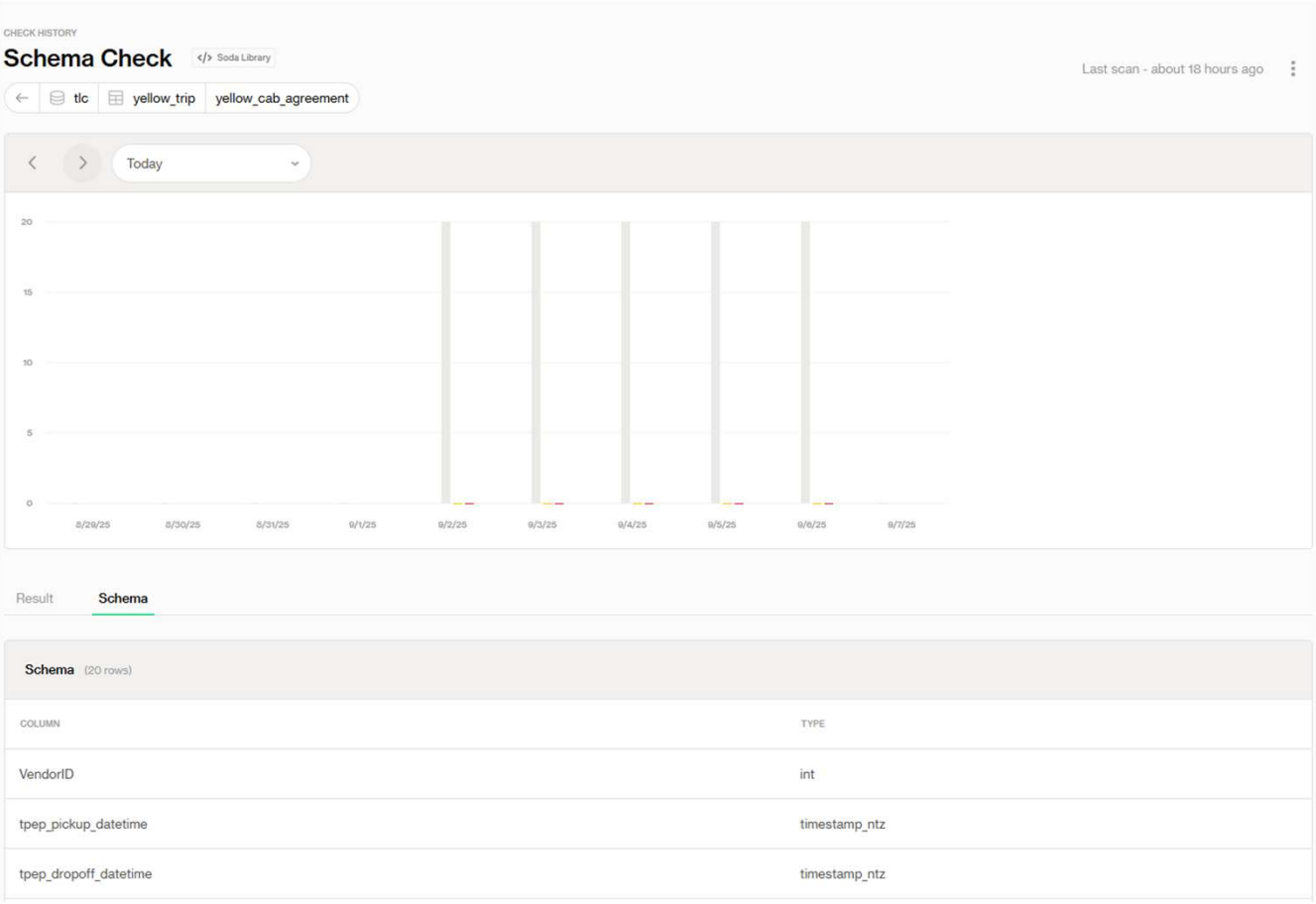


Data observability - Metrics



Data observability - Lineage

Data Observability – Schema check



SODA

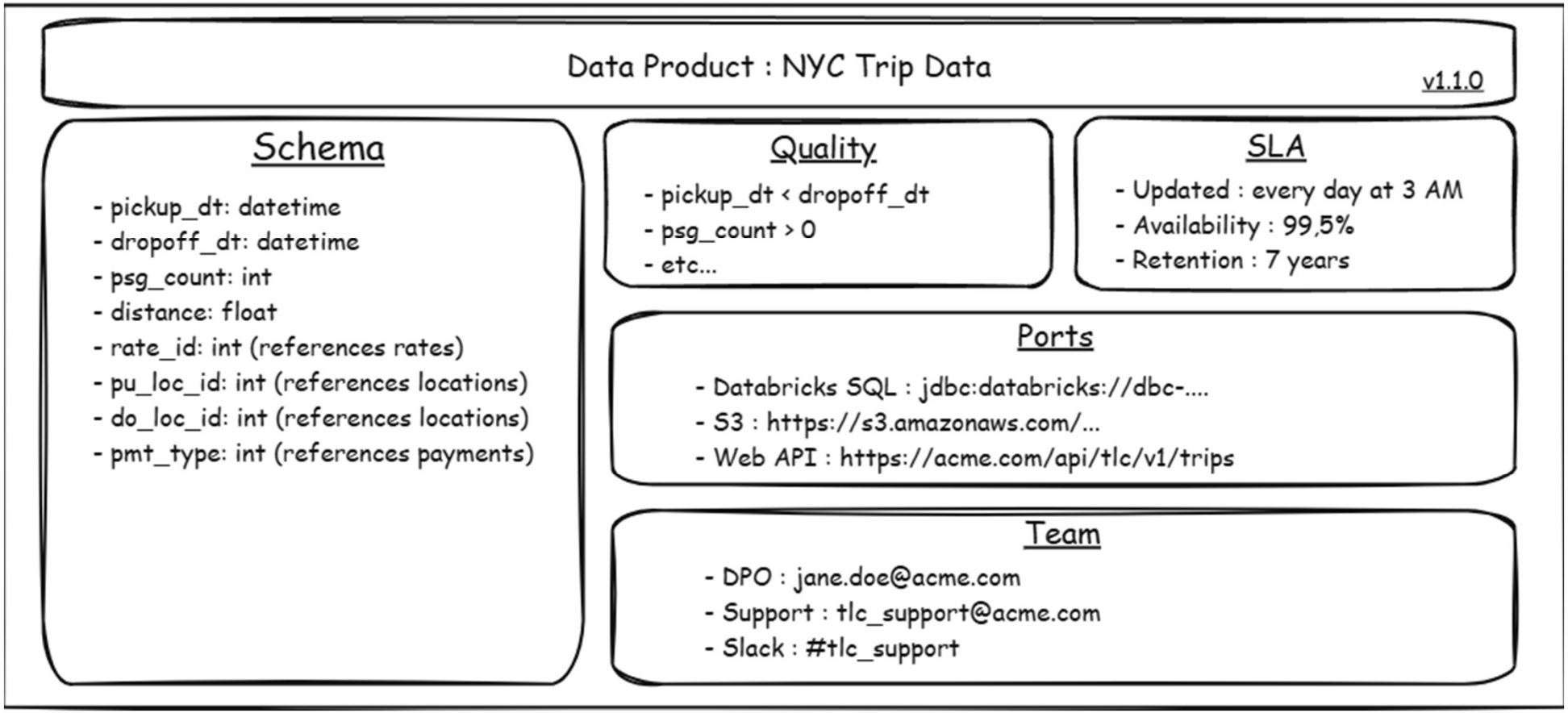
Pistes de solution

Data contracts / Data products

Il y a encore un problème…

Comment codifier / communiquer les attentes d’une équipe à l’autre ?

Data Contract / Data Product



Data Contracts - ODCS

```yaml
schema:
  - name: nyc_yellow_taxi_trip
    logicalType: object
    physicalType: table
    description: NYC Yellow Taxi Trip Records
    authoritativeDefinitions:
      - url: https://www.nyc.gov/assets/tlc/downloads/pdf/data_dictionary_trip_records_yellow.pdf
        type: businessDefinition
    properties:
      - name: tpep_pickup_datetime
        logicalType: date
        description: Date and time when the meter was engaged.
      - name: tpep_dropoff_datetime
        logicalType: date
        description: Date and time when the meter was disengaged.
      - name: passenger_count
        logicalType: integer
        description: Number of passengers in the vehicle.
      - name: trip_distance
        logicalType: number
        description: Trip distance in miles.
      - name: RatecodeID
        logicalType: integer
        description: Rate code (e.g., Standard, JFK, Newark, etc.)
```

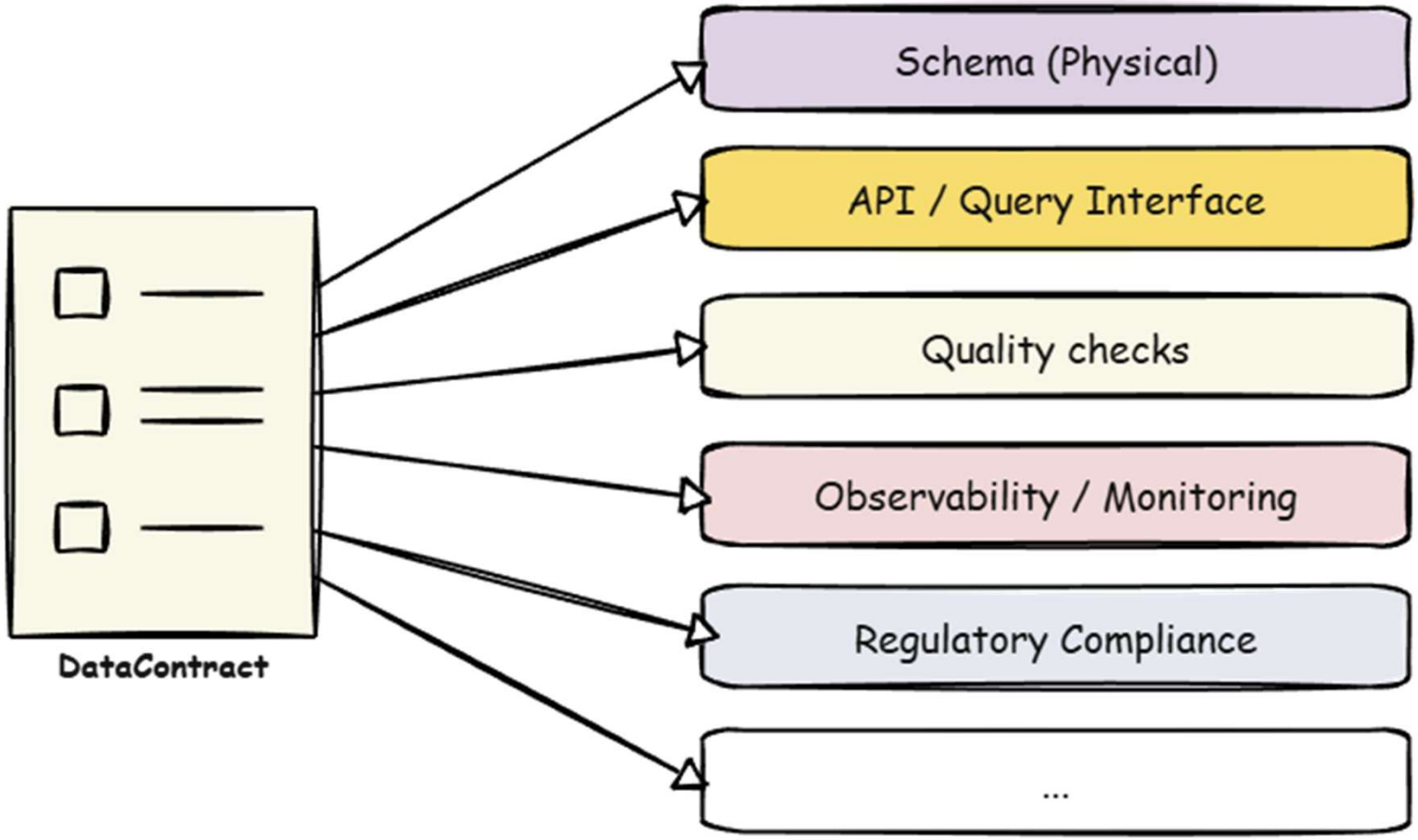
Data Contracts - ODCS

```yaml
- name: VendorID
  logicalType: string
  description: TPEP provider
  quality:
  - rule: validValues
    validValues: [
      '1', # Creative Mobile Technologies, LLC
      '2', # Curb Mobility, LLC
      '6', # Myle Technologies Inc
      '7', # Helix
    ]
```

Data Contracts - ODCS

```yaml
slaProperties:
  - property: latency
    value: 1
    unit: h
    element: nyc_yellow_taxi_trip.tpep_pickup_datetime
  - property: generalAvailability
    value: 2025-05-02T09:30:10-08:00
  - property: retention
    value: 7
    unit: y
    element: nyc_yellow_taxi_trip.tpep_pickup_datetime
```

Data contracts



Spécifications exécutables

Result	Check	Field	Details
failed	Freshness		
failed	Check RatecodeID is in a list of known values.	RatecodeID	Value: 319120.0 Fail: {'greaterThan': 0.0}
failed	Check outliers in passenger_count	passenger_count	Value: 86.0 Fail: {'greaterThan': 0.0}
failed	Check outliers in trip_distance	trip_distance	Value: 3206.0 Fail: {'greaterThan': 0.0}
passed	Check that field 'Airport_fee' is present	Airport_fee	
passed	Check that field Airport_fee has type DOUBLE	Airport_fee	
passed	Check that field 'DOLocationID' is present	DOLocationID	
passed	Check that field DOLocationID has type INT	DOLocationID	
passed	Check that field DOLocationID has no missing values	DOLocationID	
passed	Check that field 'PULocationID' is present	PULocationID	
passed	Check that field PULocationID has type INT	PULocationID	
passed	Check that field PULocationID has no missing values	PULocationID	
passed	Check that field 'RatecodeID' is present	RatecodeID	
passed	Check that field RatecodeID has type BIGINT	RatecodeID	
passed	Check that field 'VendorID' is present	VendorID	
passed	Check that field VendorID has type INT	VendorID	
passed	Check that field VendorID has no missing values	VendorID	
passed	Check VendorID is in a list of known values.	VendorID	
passed	Check that field 'cbd_congestion_fee' is present	cbd_congestion_fee	
passed	Check that field cbd_congestion_fee has type DOUBLE	cbd_congestion_fee	

Data Contracts – Document Excel ??

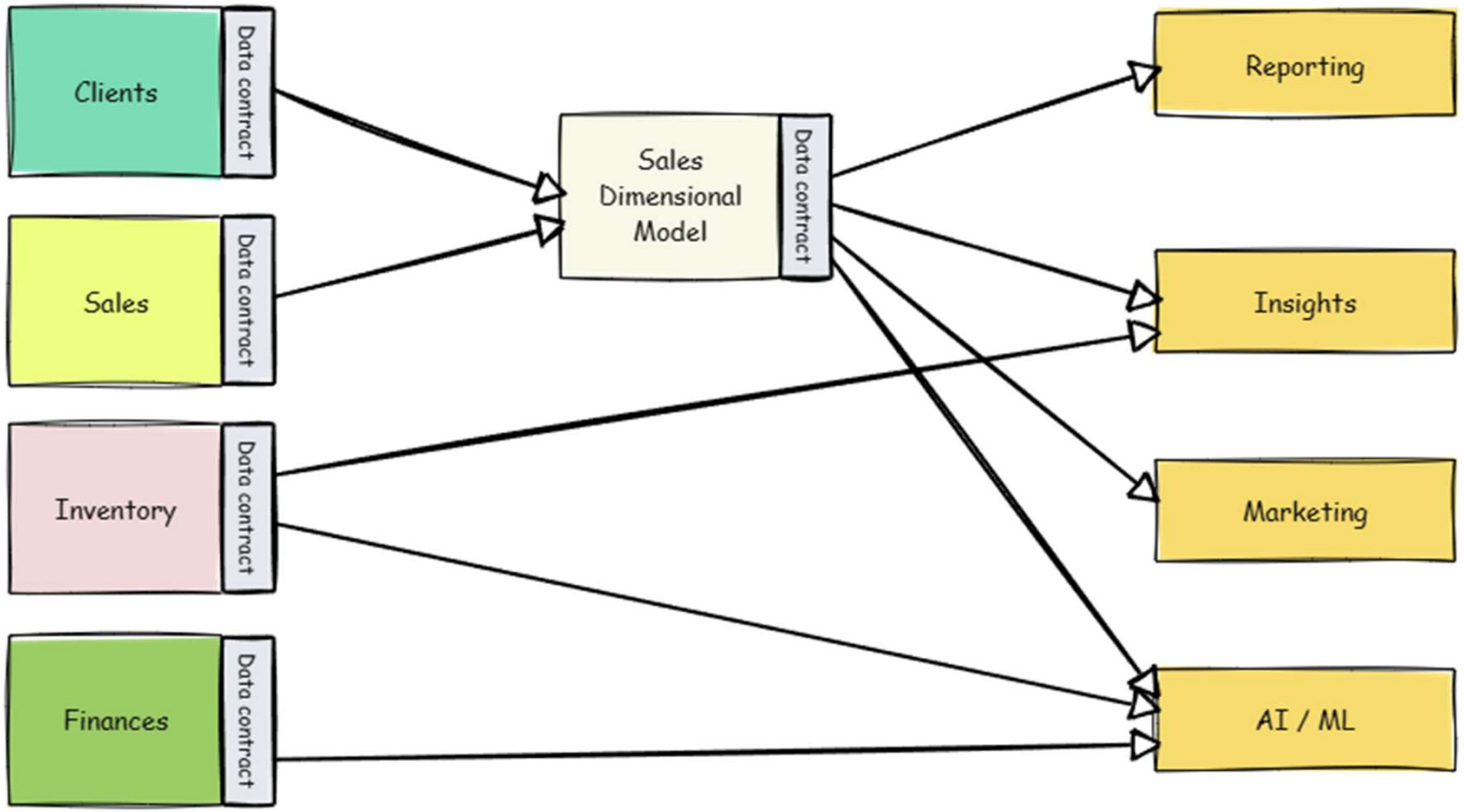
Schema

This section describes the data model for one table, message, or object with their properties.
Copy this sheet for every model in your data contract.

Name	yellow_trip
Type	table
Description	Provide data about the NYC Ta
Business Name	Yellow cab trips
Physical Name	nprod.tlc.yellow_trip
Data Granularity	transactional
Tags	

Property	Logical Type	Physical Type	Description	Required	Unique	Classificatio
vendor_id	integer	bigint	Vendor id for the TPEP provider	true	false	public
tpep_pickup_datetime	timestamp	timestamp	Pickup date and time	true	false	public
tpep_dropoff_datetime	timestamp	timestamp	Dropoff date and time	true	false	public
passenger_count	integer	int	Number of passangers	true	false	public
trip_distance	number	decimal	Trip distance in miles	true	false	public
ratecode_id	integer	int	Rate code (e.g., Standard, JFK, Newark, etc.)	false	false	public
pu_location_id	integer	int	Pickup location id	true	false	public
do_location_id	integer	int	Dropoff location id	true	false	public
fare	number	decimal	Total fare including taxes and tip	true	false	public

Réseau de data products – Data Mesh



La culture organisationnelle

- Il y a une limite à ce que les moyens techniques peuvent accomplir
- La culture, les rôles et responsabilités sont des aspects critiques
- Les producteurs doivent être imputables de leurs données
- Les consommateurs doivent définir leurs attentes

Conclusion

La qualité des données est une question d'attentes…

- Explorer les données pour mieux connaître leur valeur (EDA)
- Mettre en place des vérifications pour assurer la qualité (Quality Checks)
- Surveiller proactivement le flow de données (Data Observability)
- Mieux définir les attentes, les rôles et les responsabilités (Data contracts / Data products)

Librairies et frameworks

- YData Profiling : https://github.com/ydataai/ydata-profiling
- Databricks Labs DQX : https://databrickslabs.github.io/dqx/
- Soda : https://www.soda.io/
  - Soda core : https://github.com/sodadata/soda-core

Ressources

- Data Quality
  - Intro : https://www.soda.io/resources/no-bs-guide-to-data-quality-dimensions
- Data Observability
  - Intro : https://www.ibm.com/think/topics/data-observability
- Data Contracts & Data Products
  - ODCS : https://bitol-io.github.io/open-data-contract-standard/latest/
  - Tutorial : https://medium.com/data-mesh-learning/so-you-want-to-work-with-data-contracts-and-data-products-03e86f099710
  - Talk (en français !) : https://www.linkedin.com/events/odps-l-opendataproductstandard-7353360934775529472/theater/
  - Gabarit Excel : https://github.com/datacontract/open-data-contract-standard-excel-template
  - Data contract CLI : https://cli.datacontract.com/
- Data Mesh
  - https://www.linkedin.com/company/data-mesh-learning/

Projet GitHub

- https://github.com/shbehna/data-contract-demo

Autres références

- Gartner
  - https://www.gartner.com/en/newsroom/press-releases/2015-09-15-gartner-says-business-intelligence-and-analytics-leaders-must-focus-on-mindsets-and-culture-to-kick-start-advanced-analytics
- NYC Taxi Data
  - https://www.nyc.gov/site/tlc/about/tlc-trip-record-data.page

Questions