





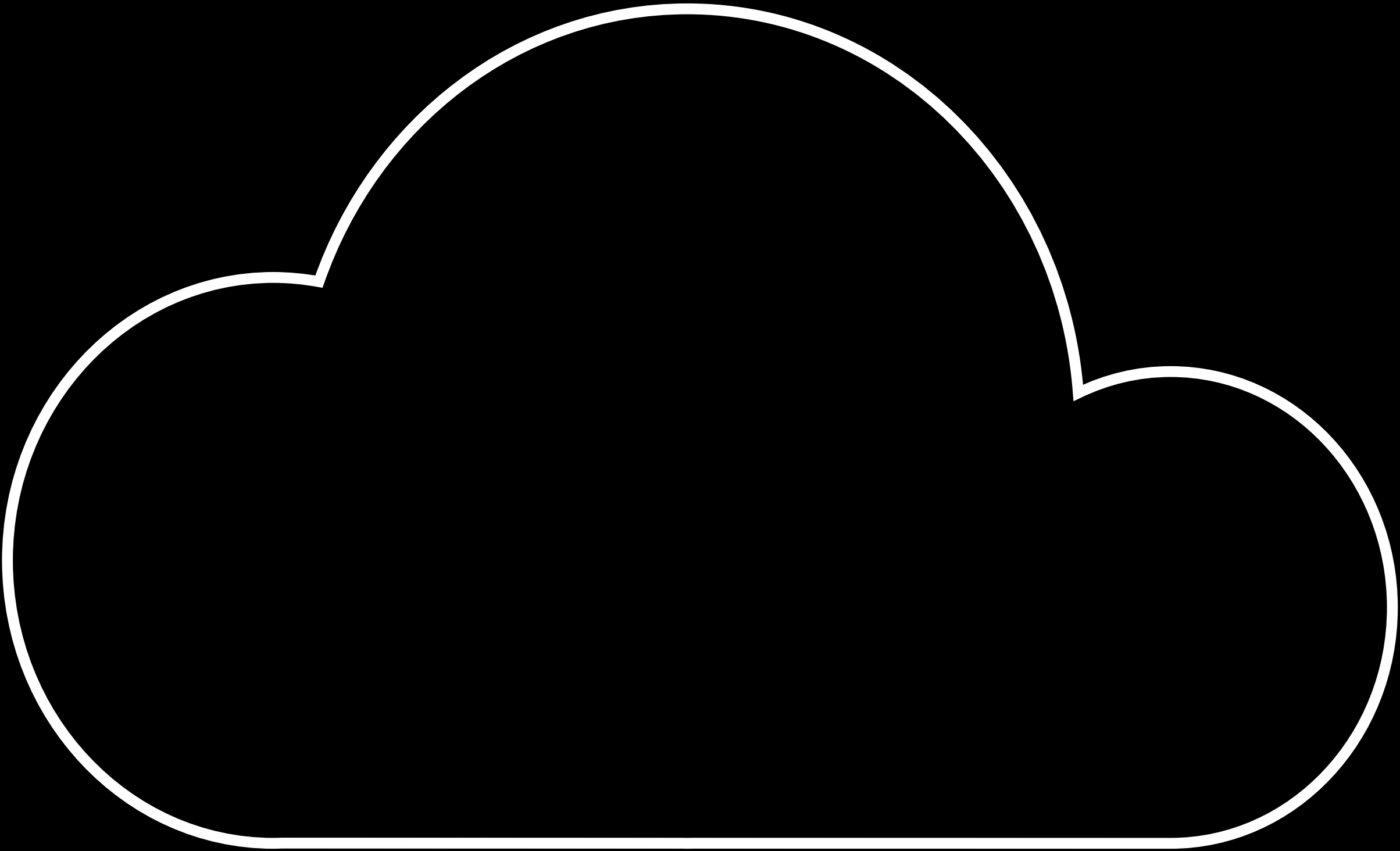
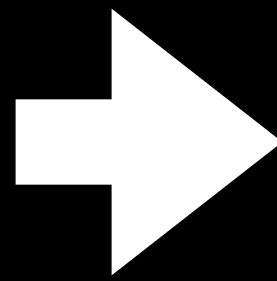
DuckLake

The SQL-Powered Lakehouse Format



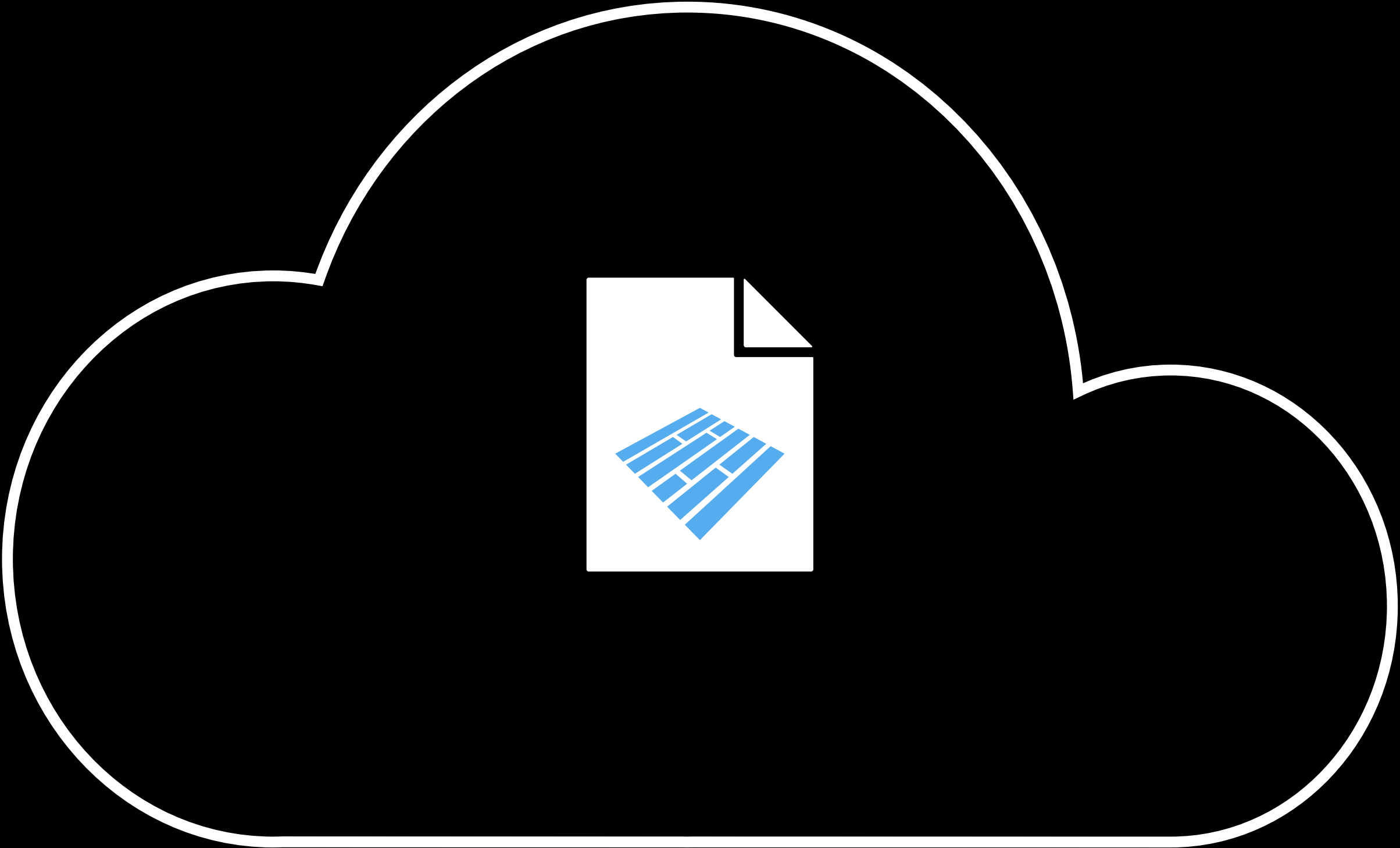
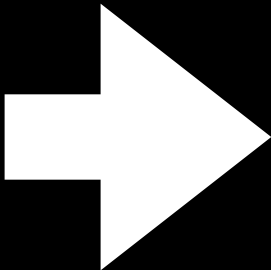


Name	Speed	Tonnage



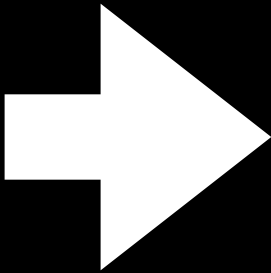
v1

Name	Speed	Tonnage



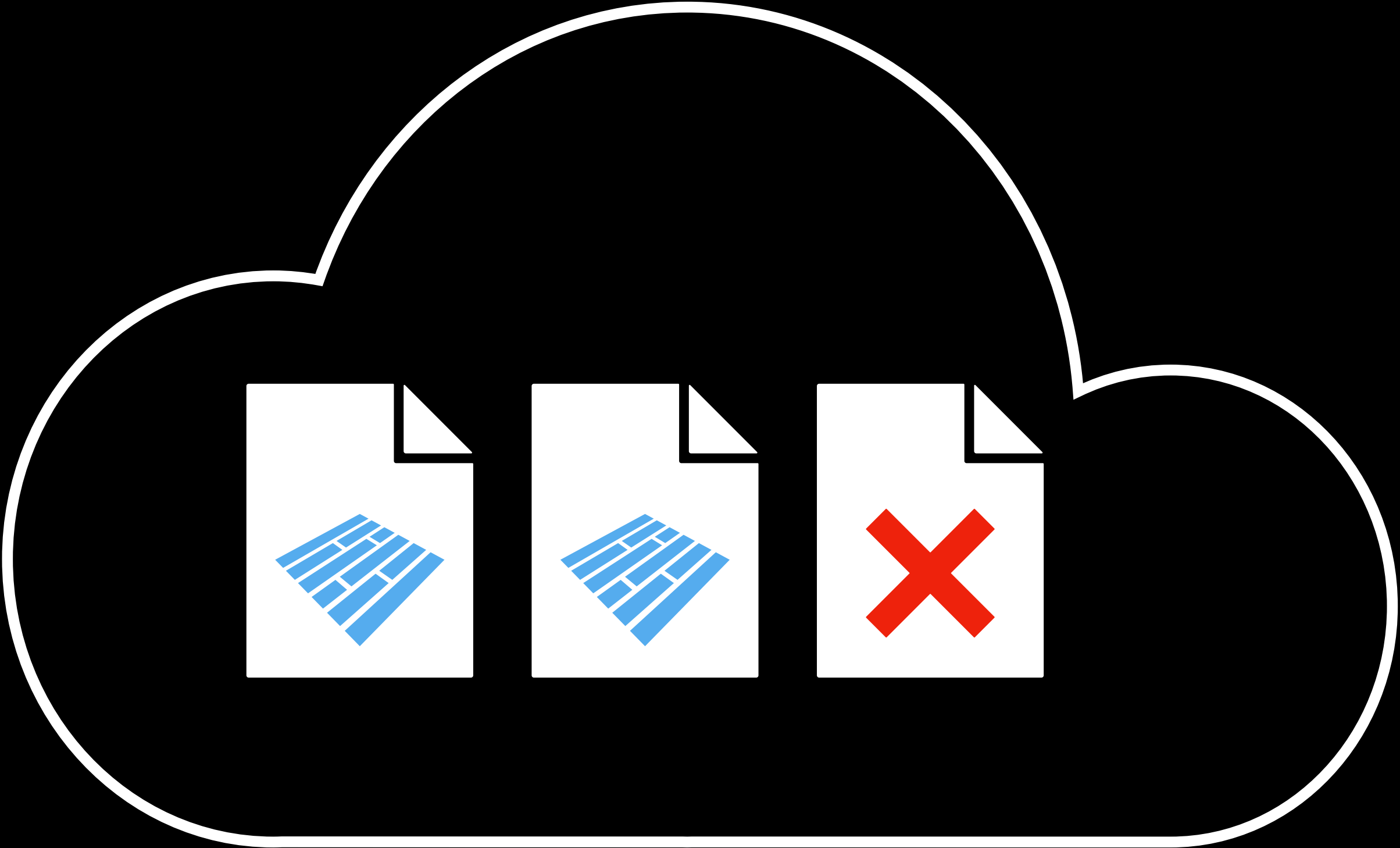
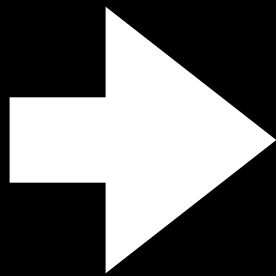
v2

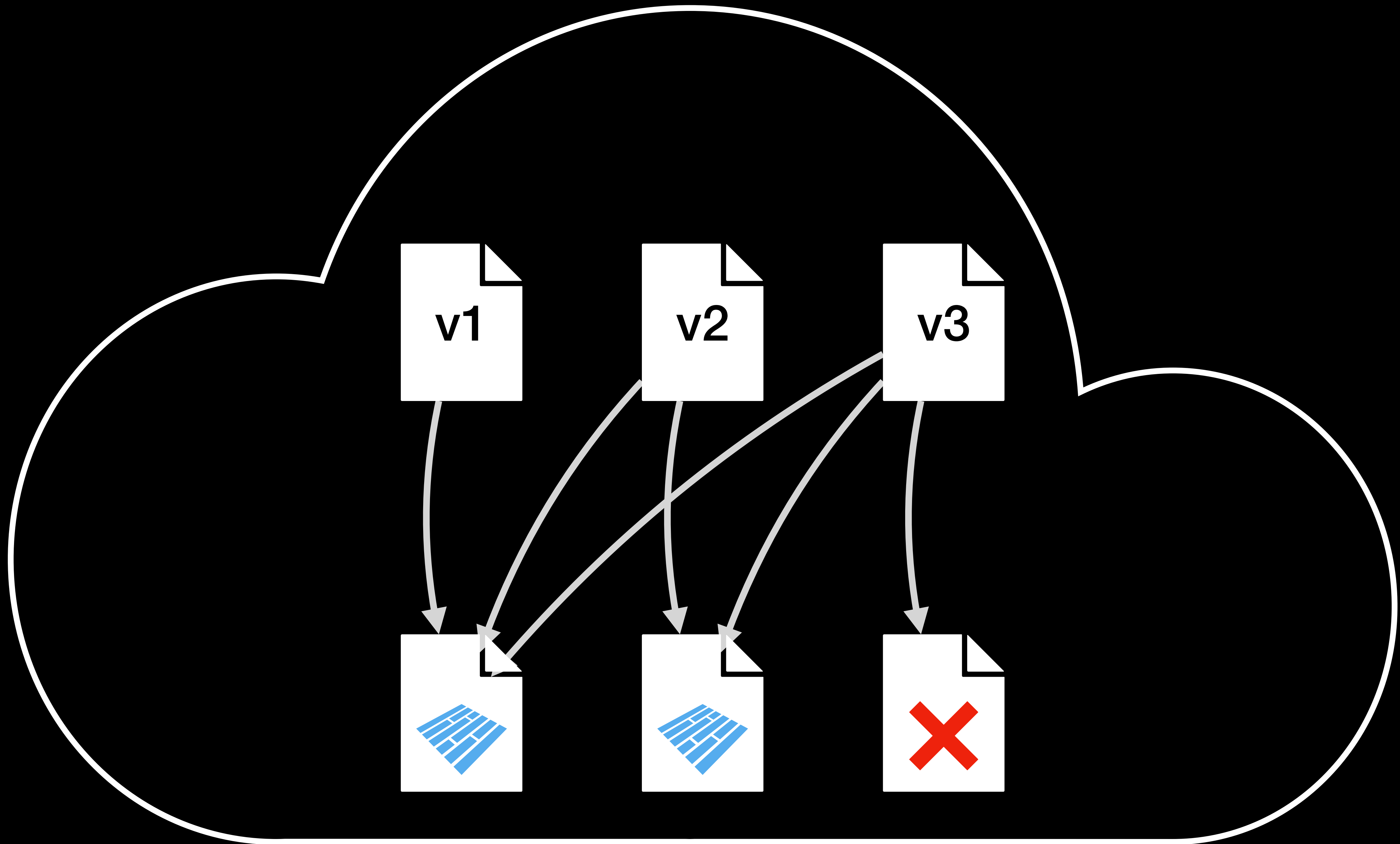
Name	Speed	Tonnage

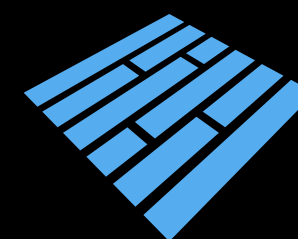
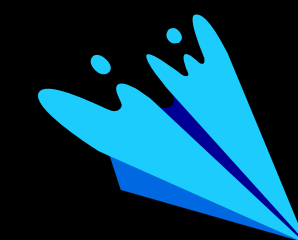
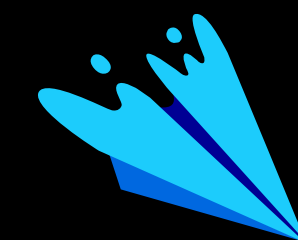
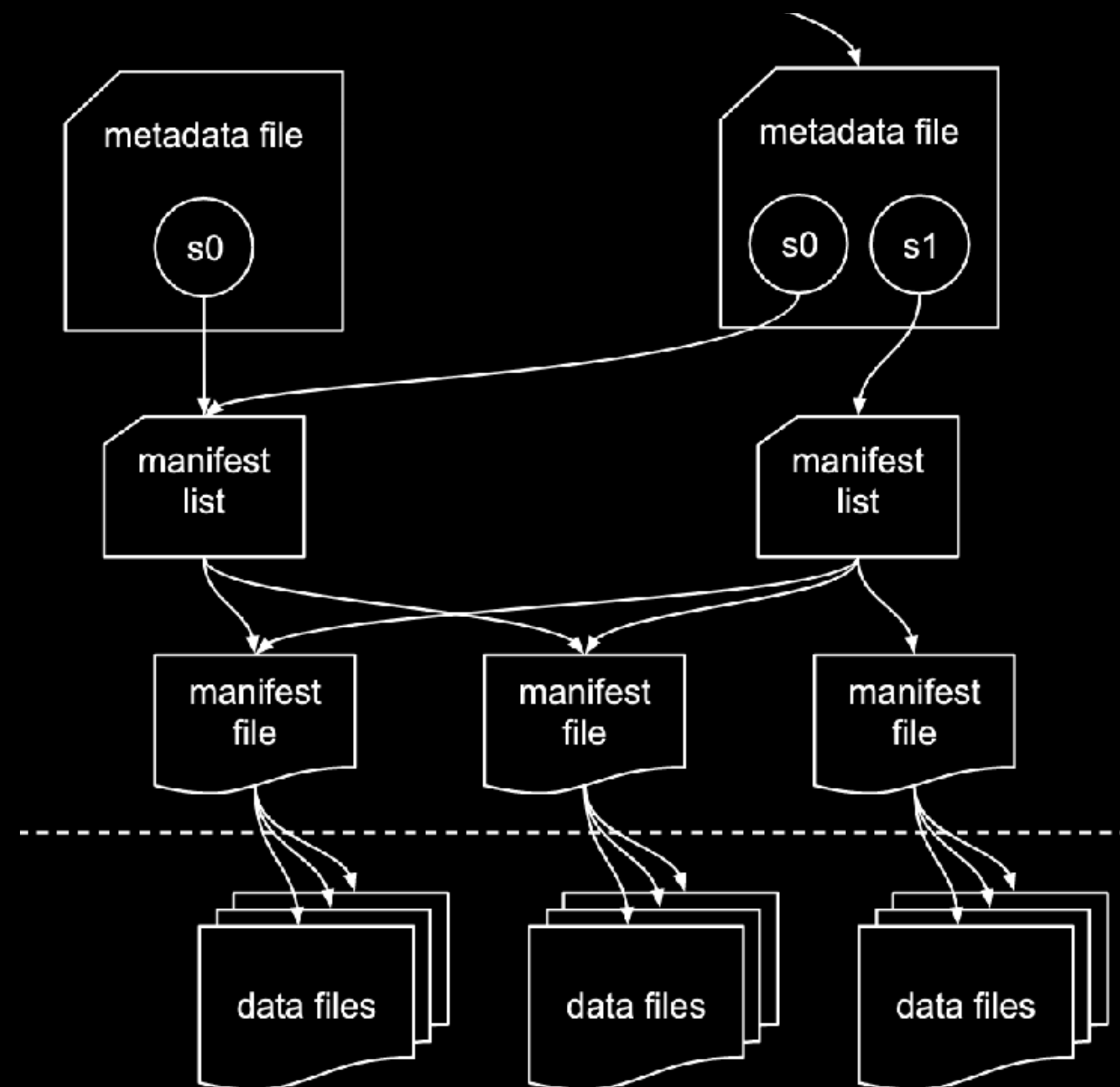


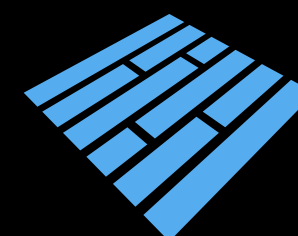
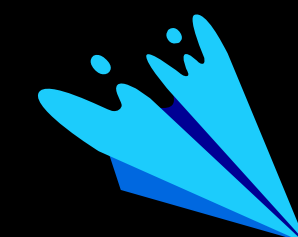
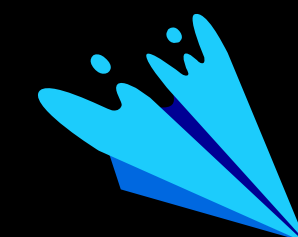
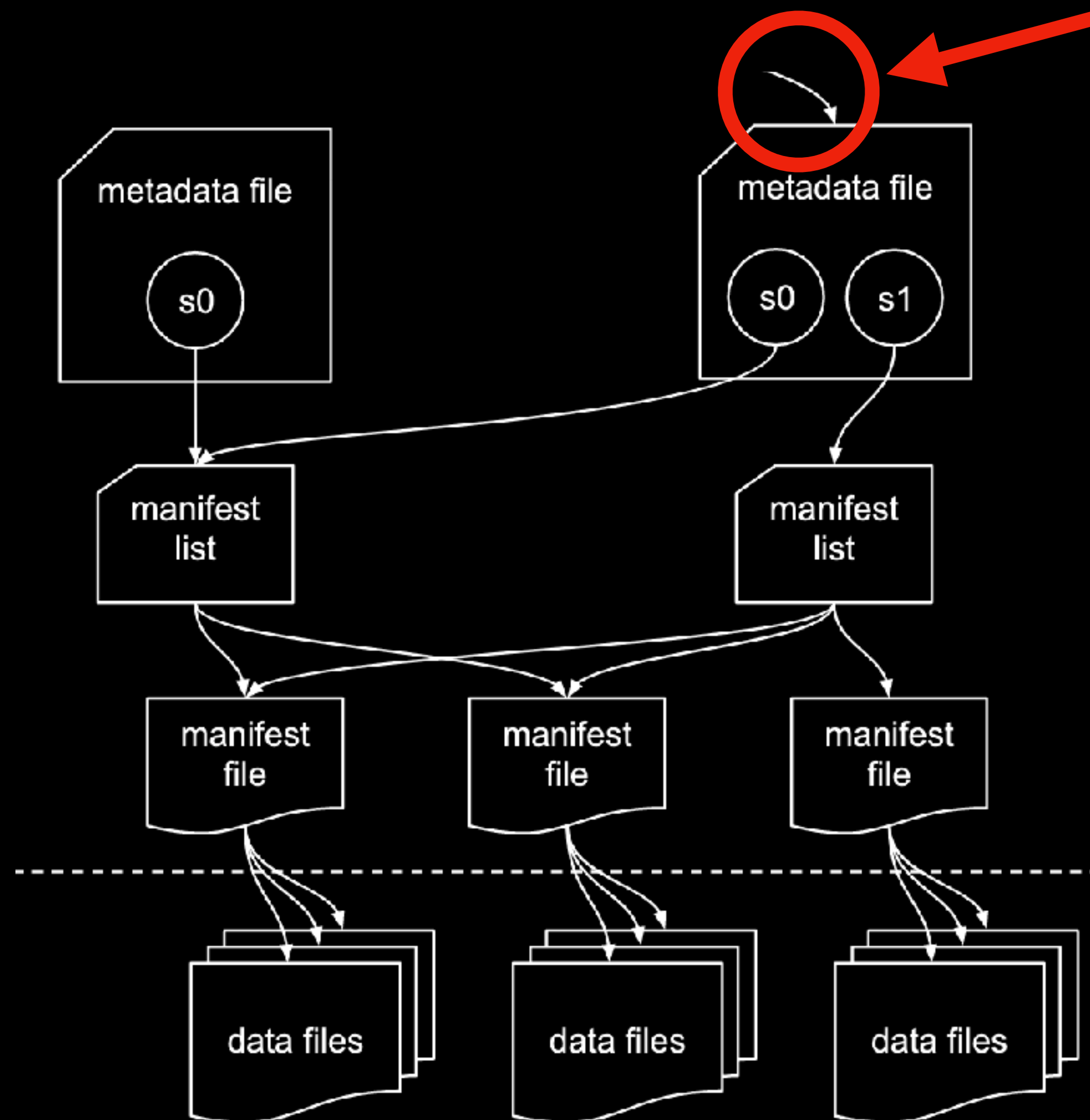
v3

Name	Speed	Tonnage



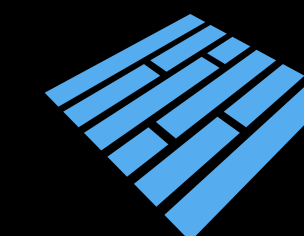
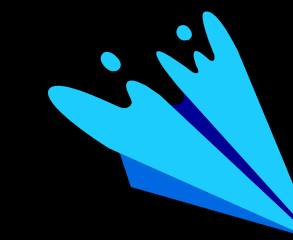
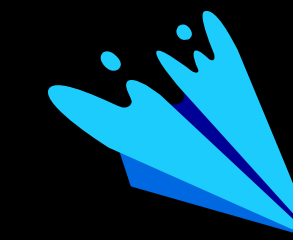
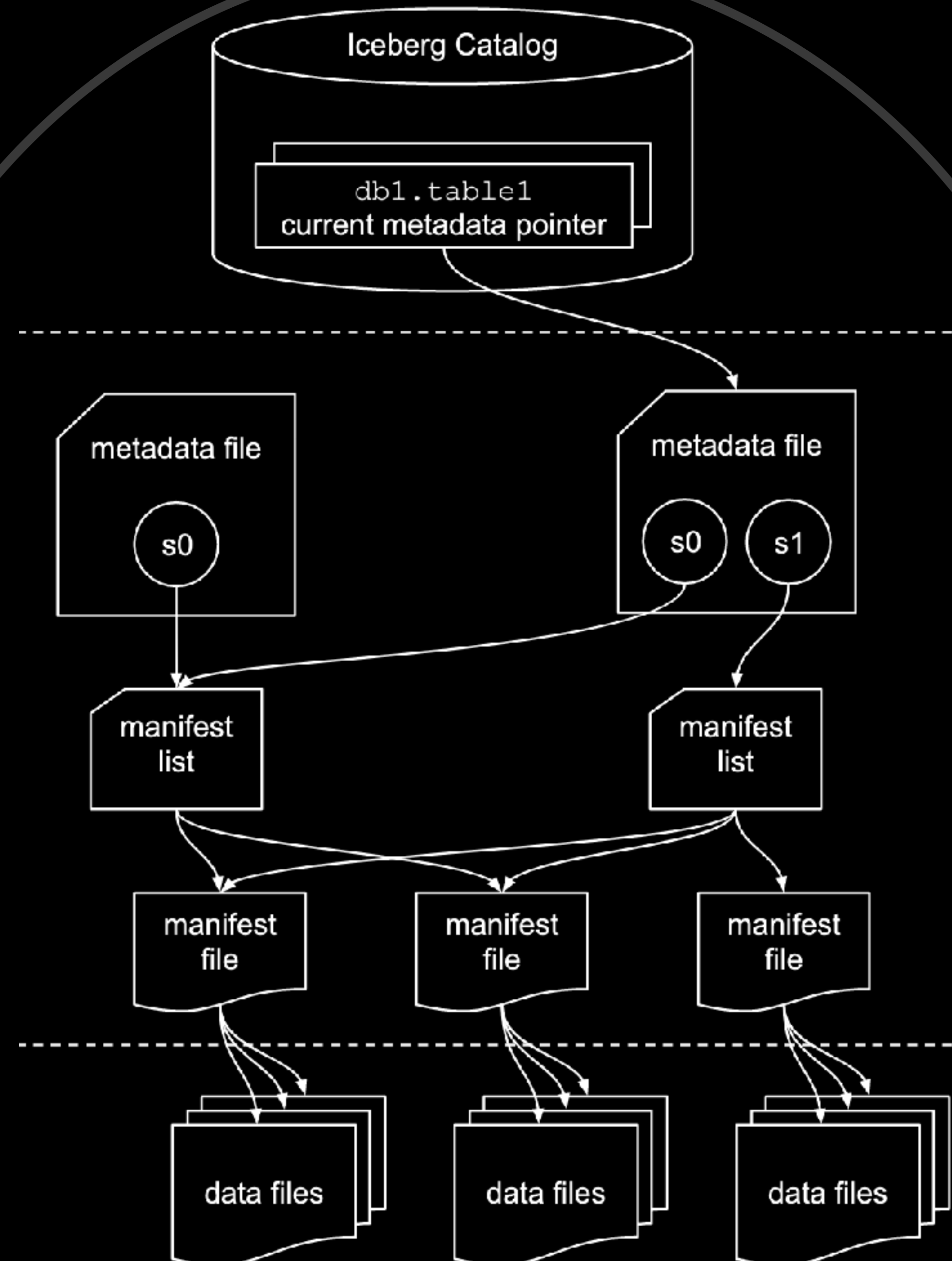


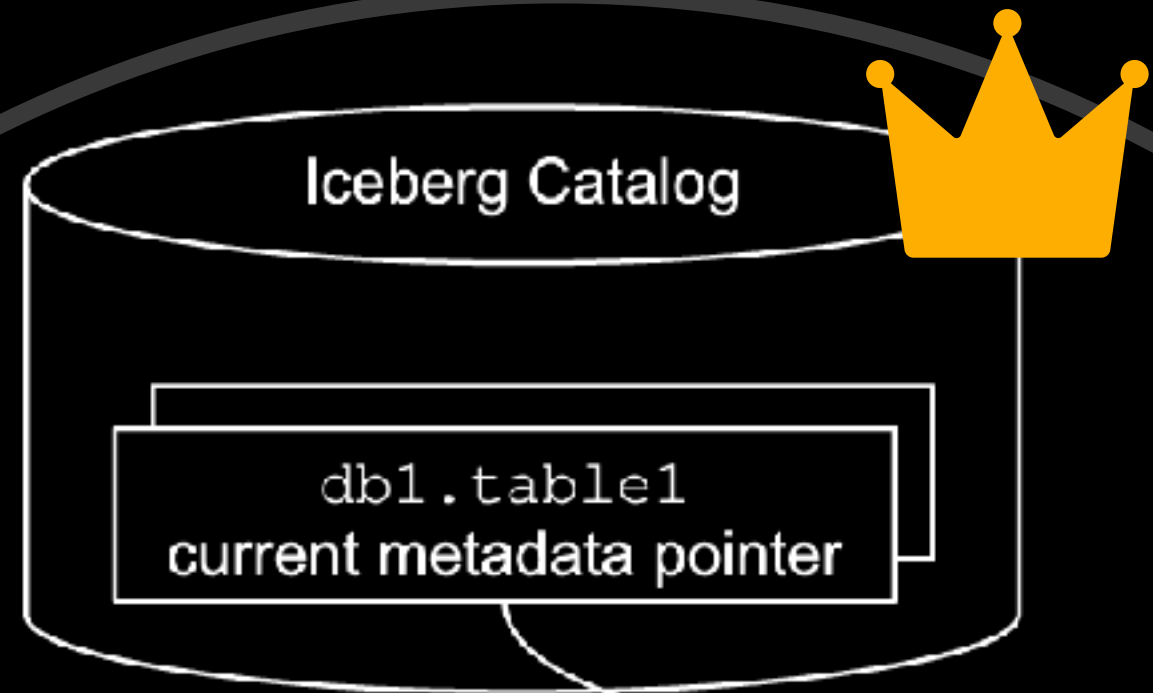




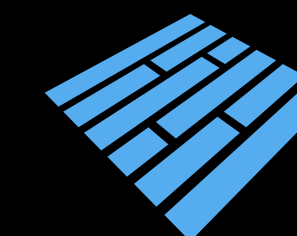
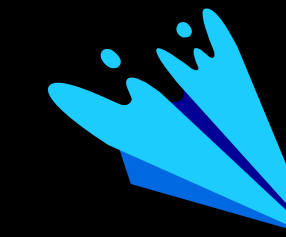
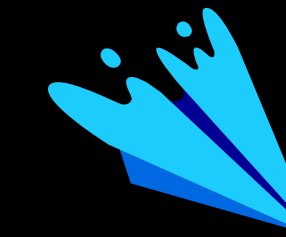
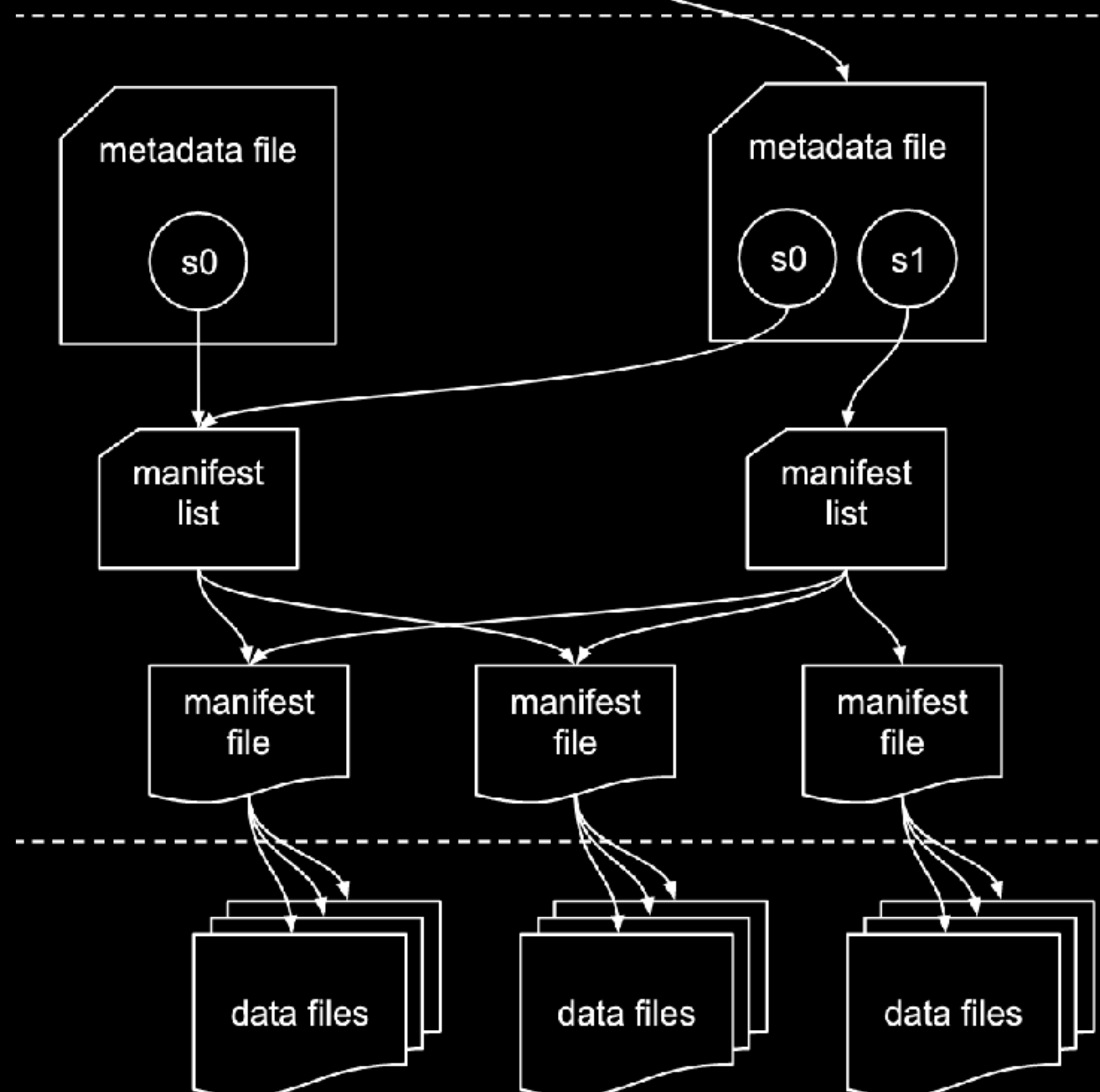


Java
REST
Postgres





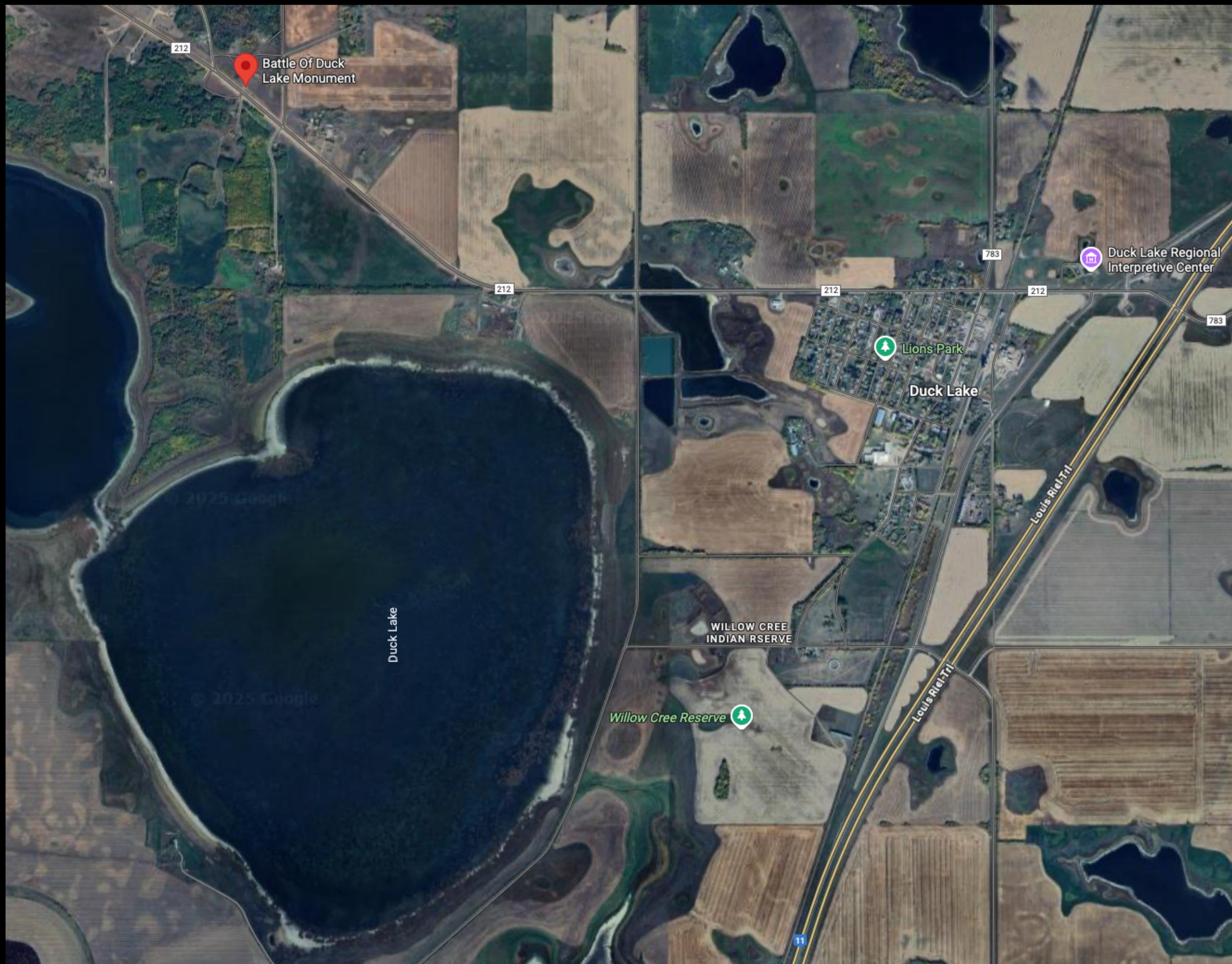
Java
REST
Postgres

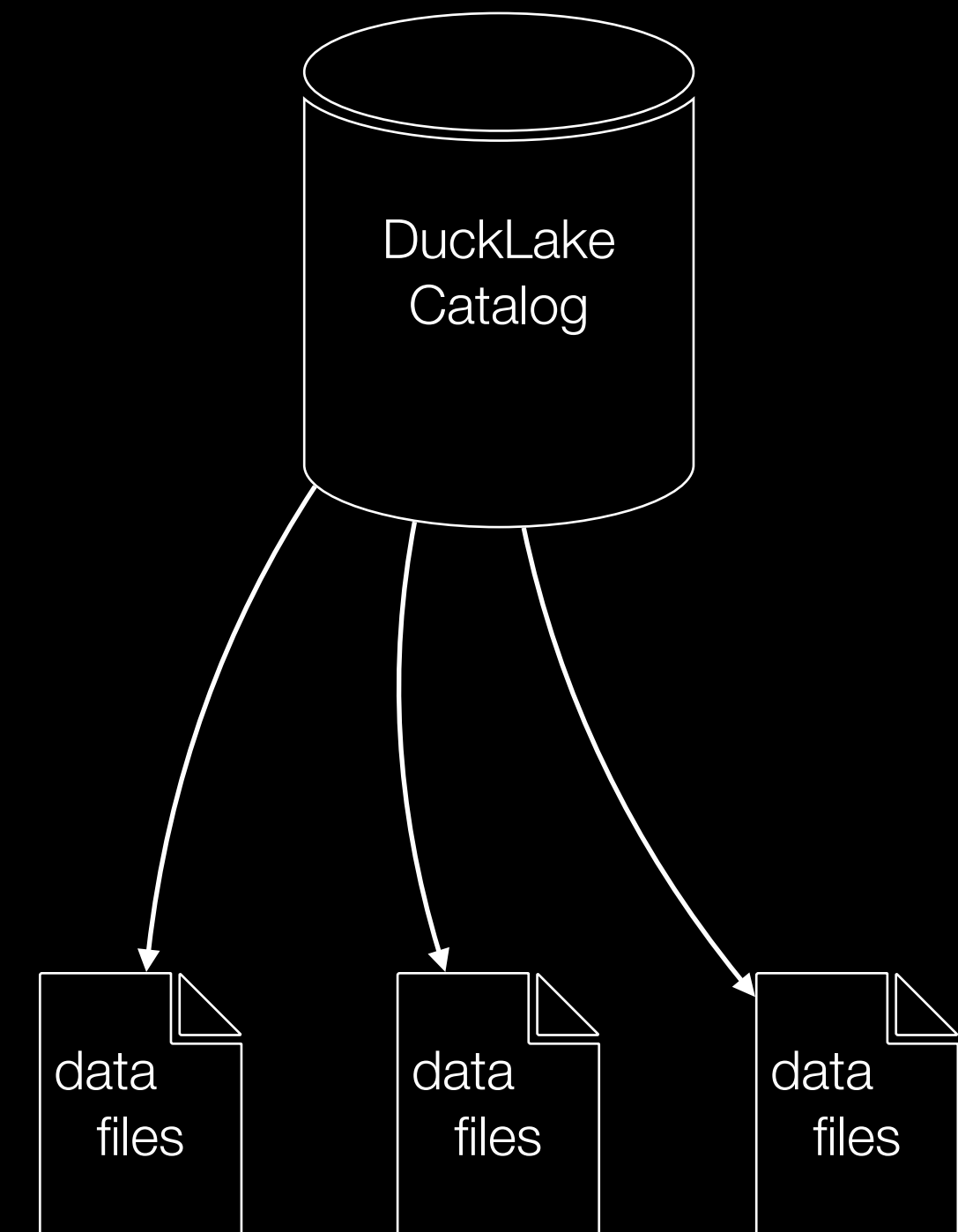
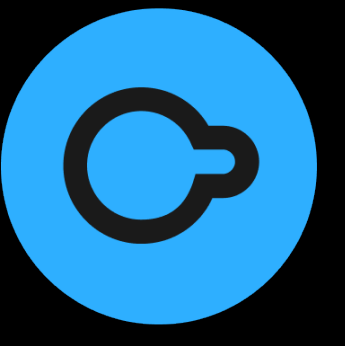
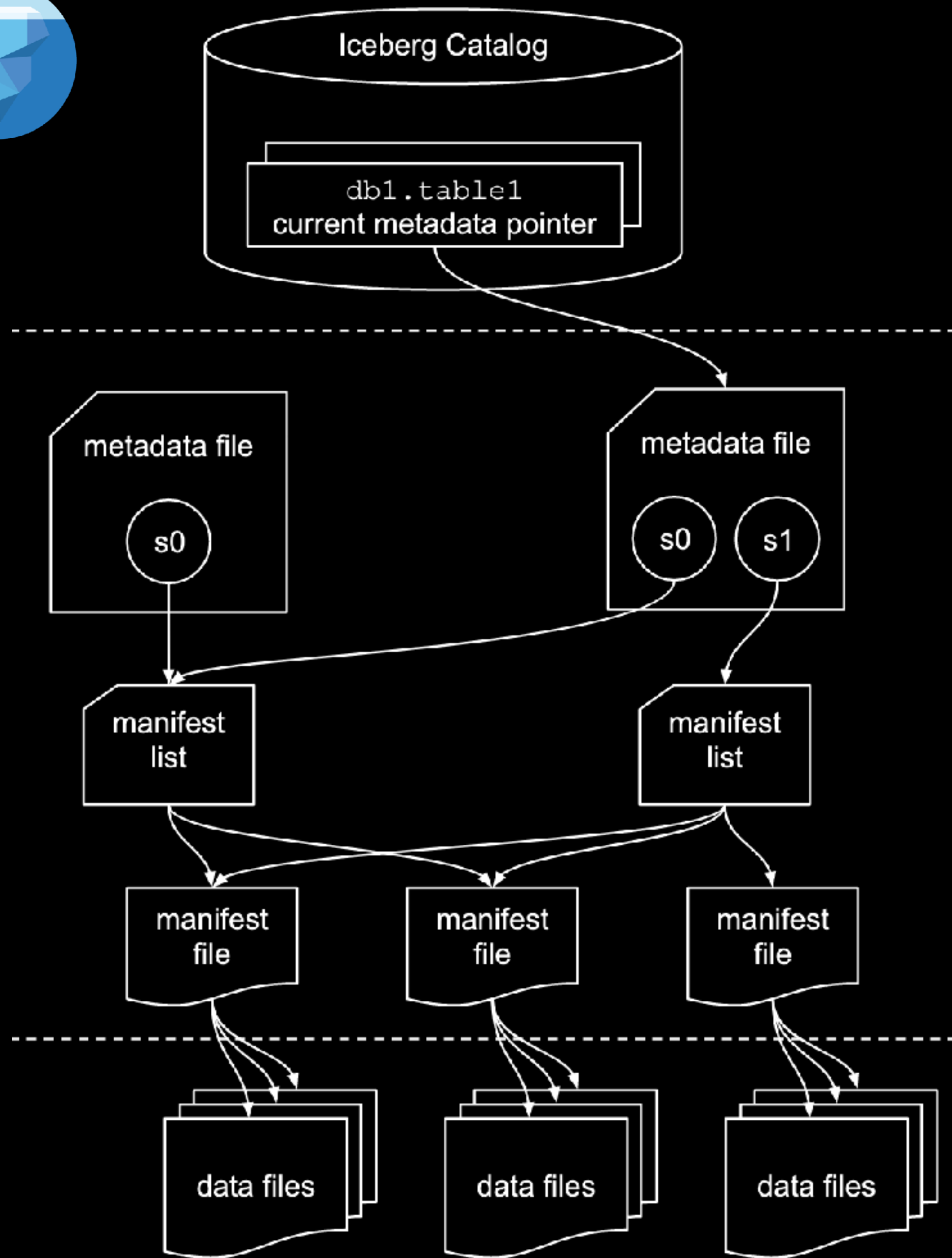






DuckLake





Simplicity
Scalability
Speed

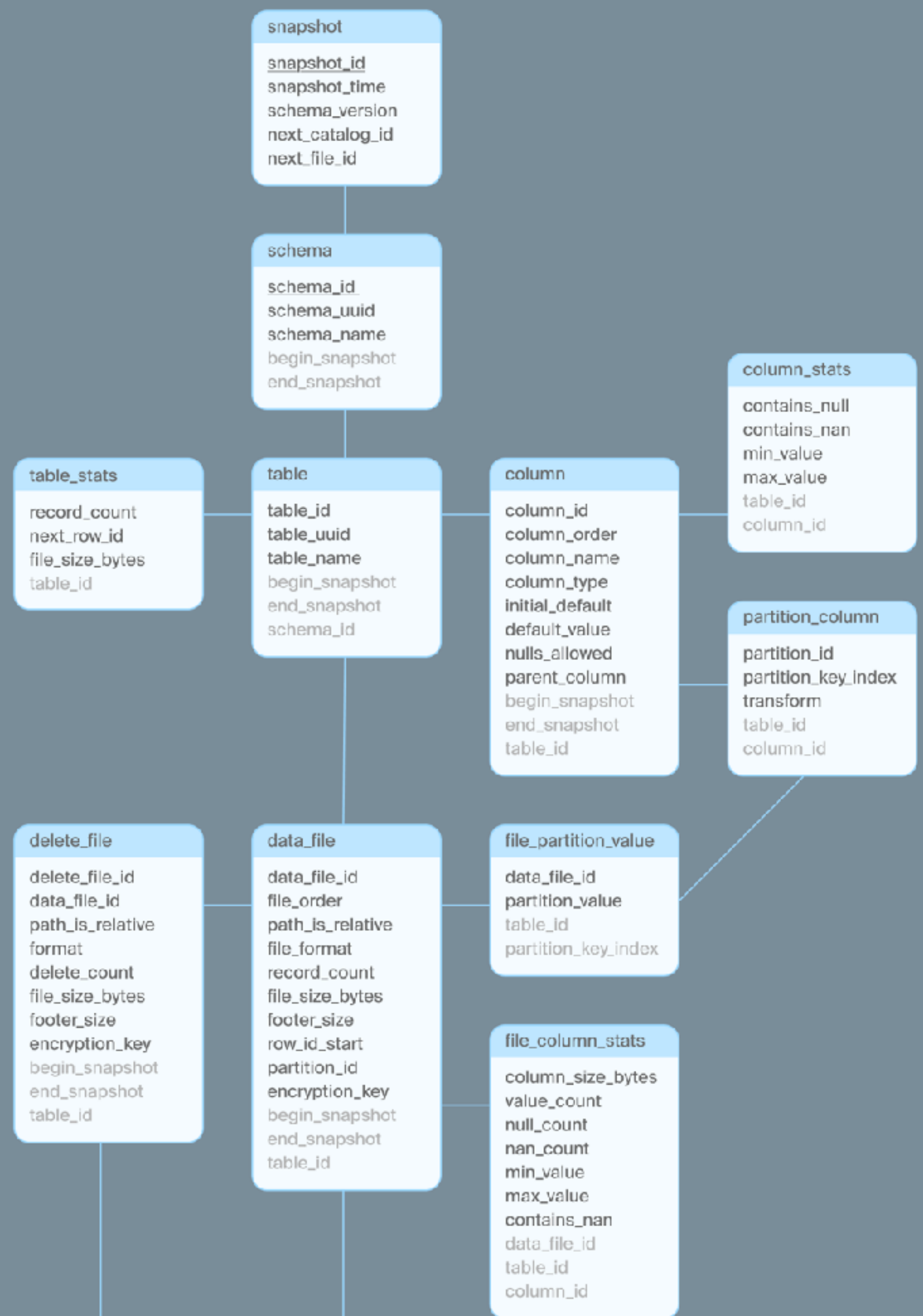
Simplicity

```
$ curl install.duckdb.org | bash
```

```
$ curl install.duckdb.org | bash  
$ ~/.duckdb/cli/latest/duckdb
```

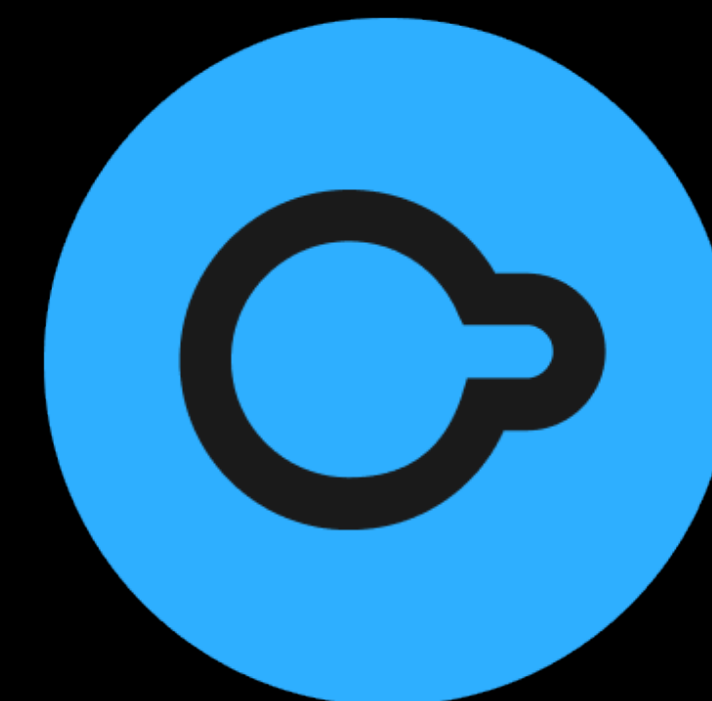
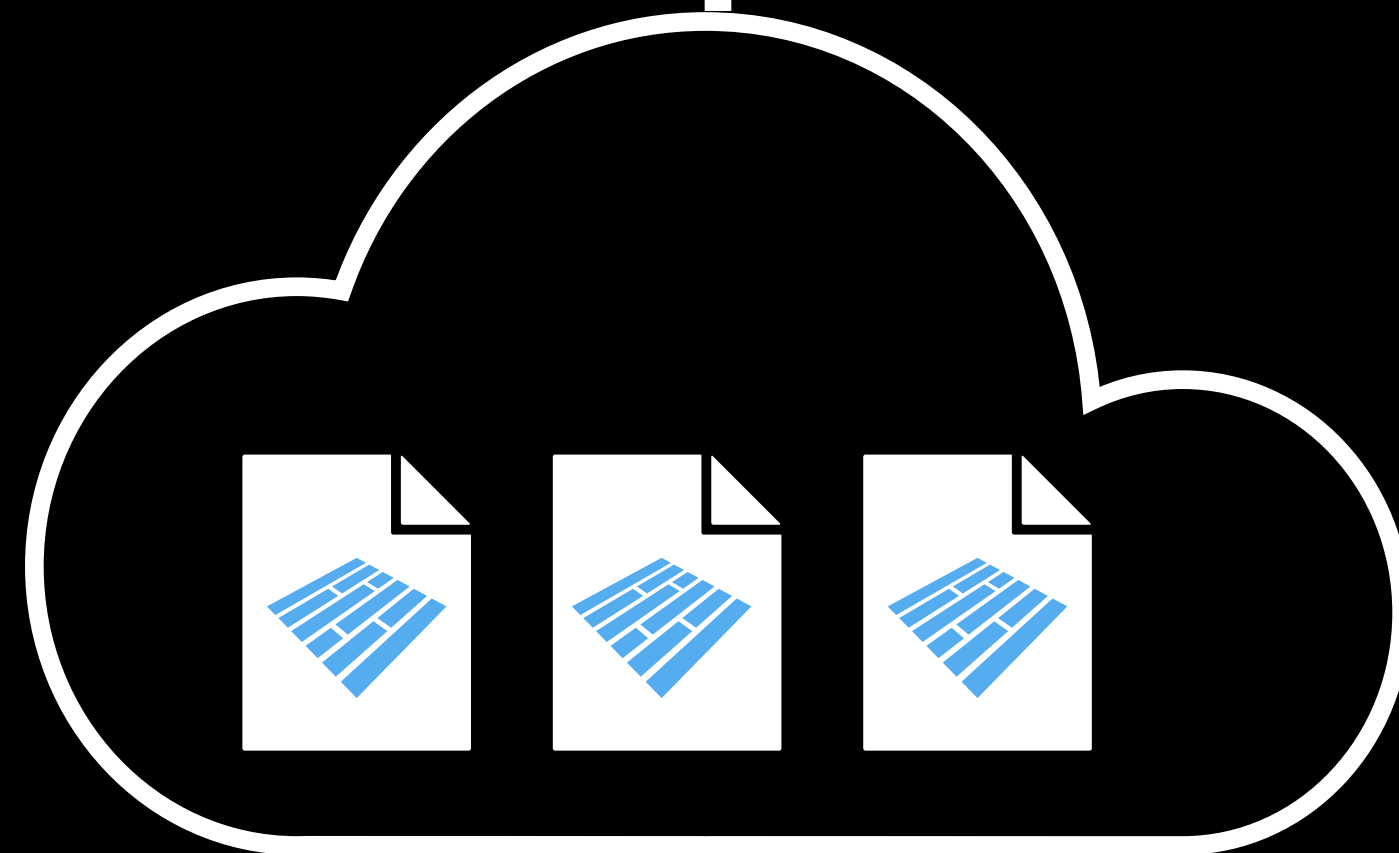
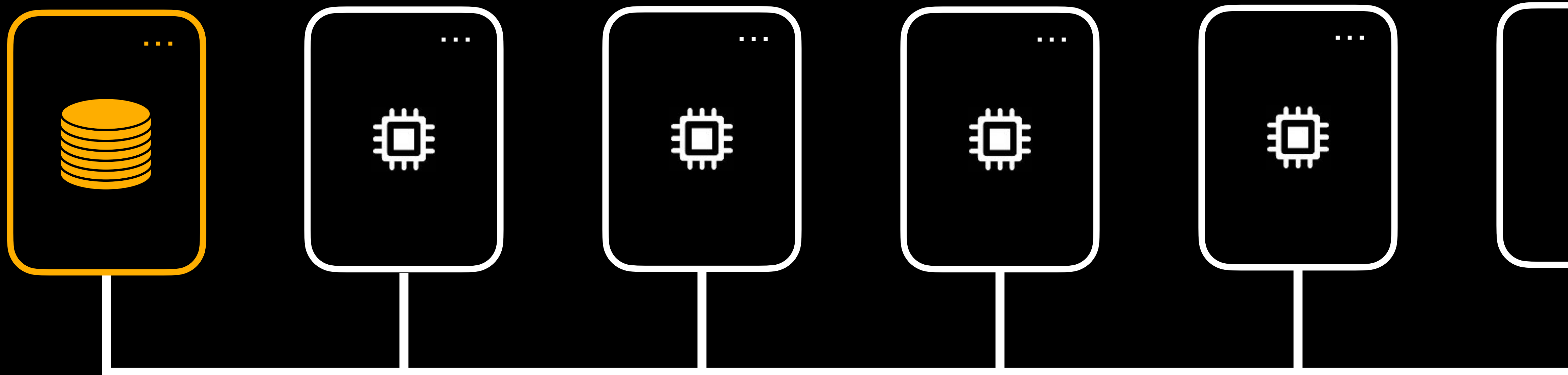
```
$ curl install.duckdb.org | bash
$ ~/.duckdb/cli/latest/duckdb
► ATTACH 'ducklake:metadata.ducklake' AS dl1;
```

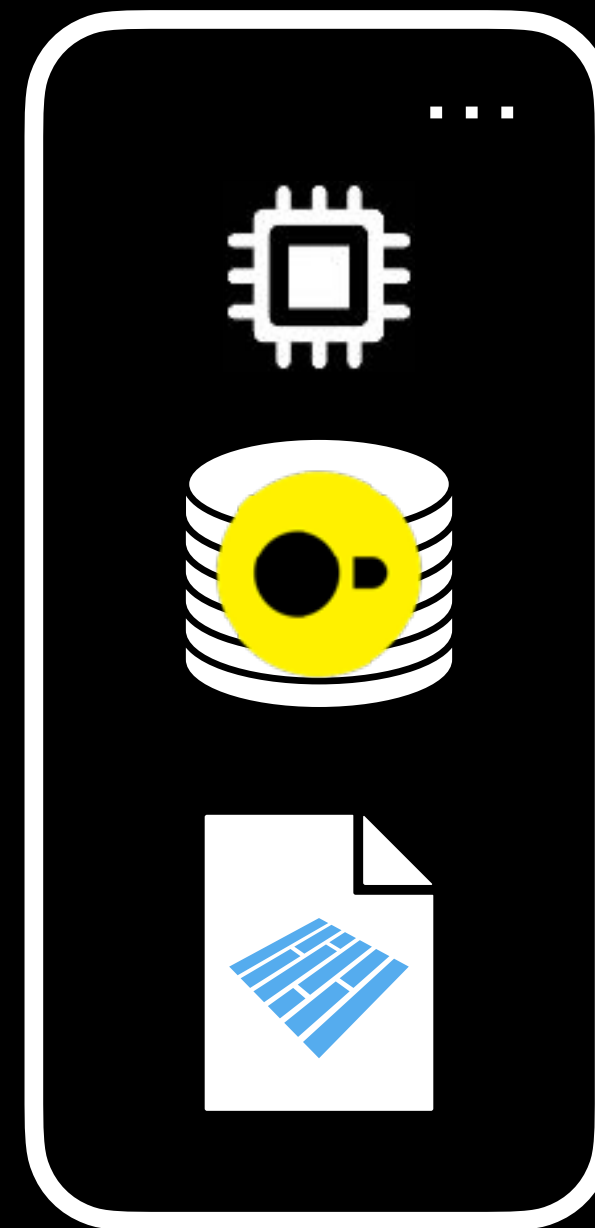
Database



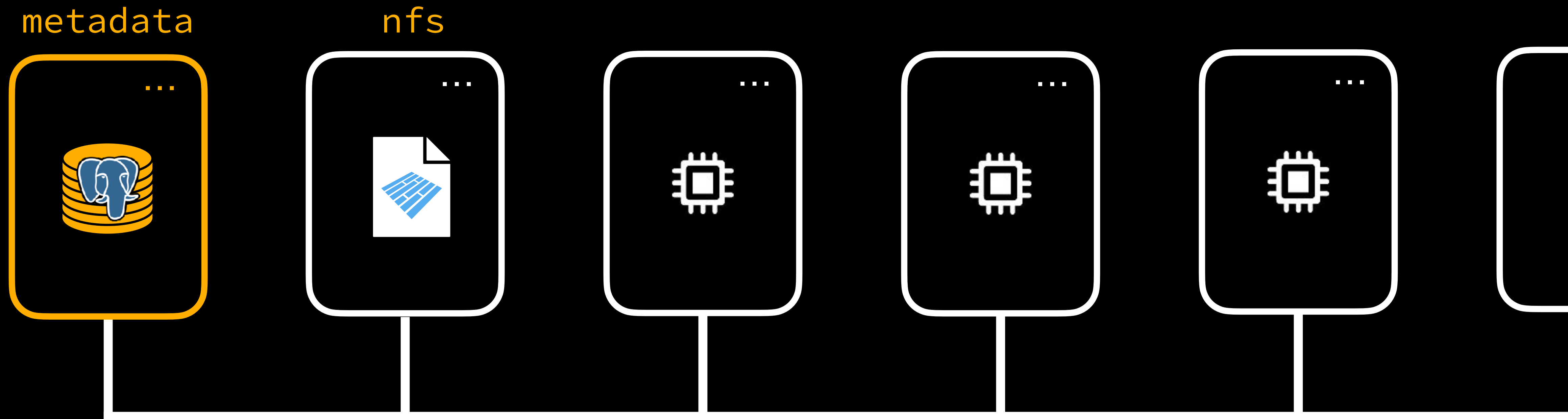
Scalability





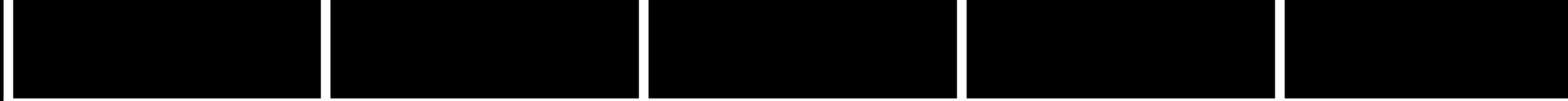
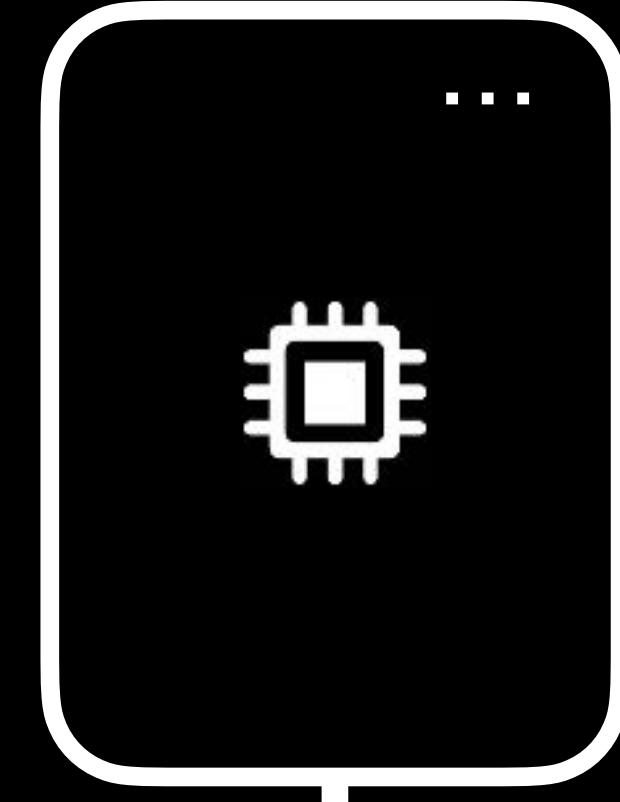
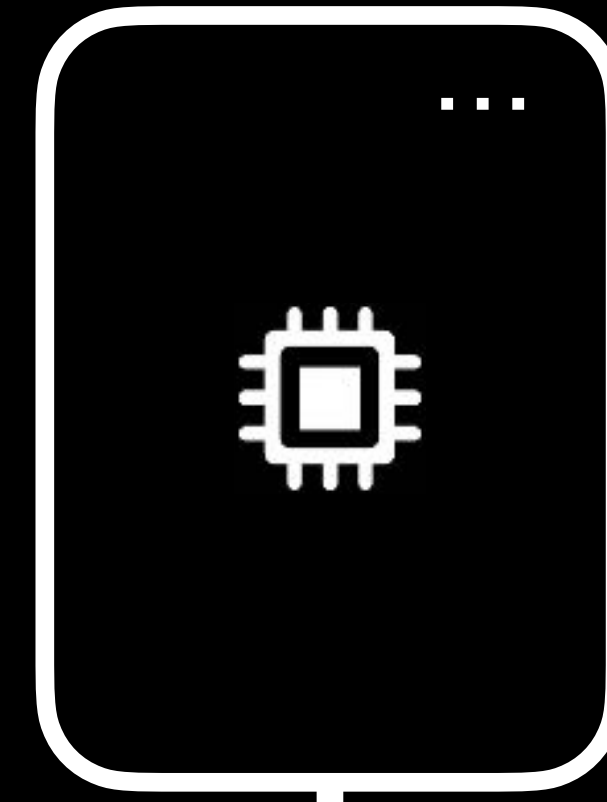
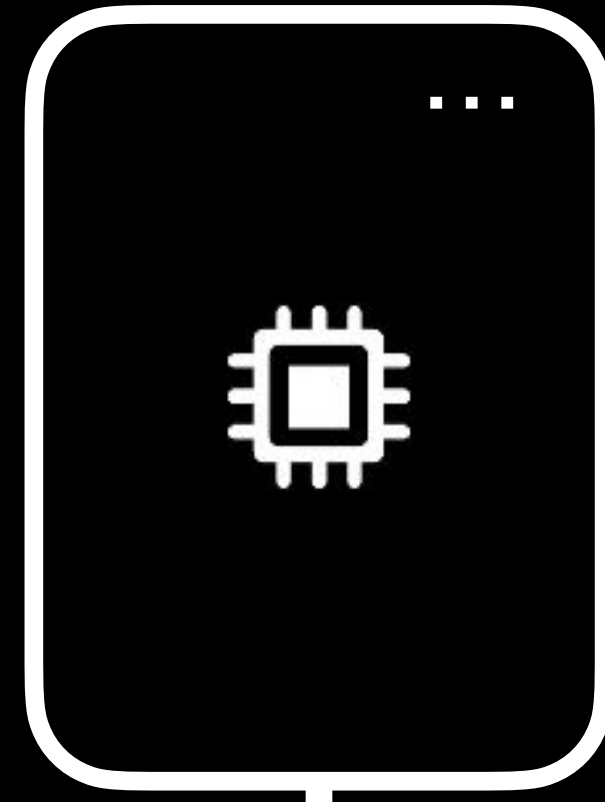
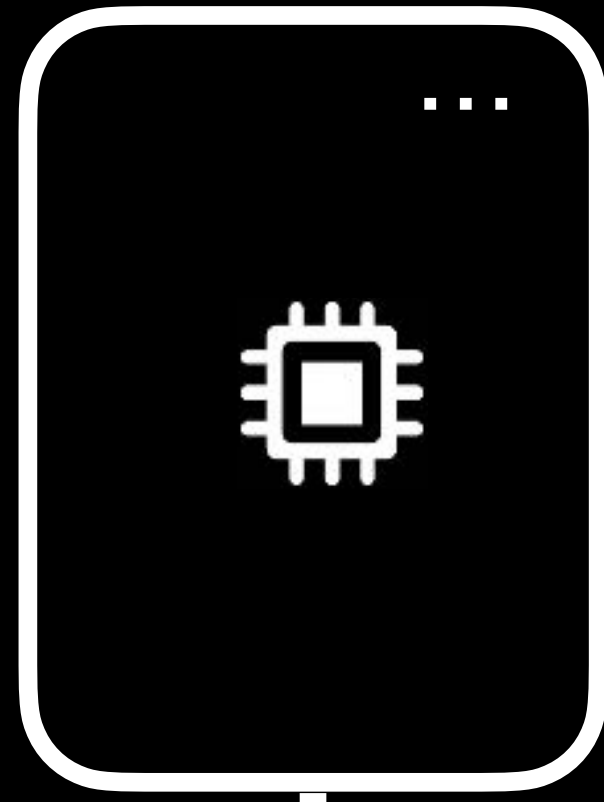


```
ATTACH 'ducklake:metadata1.ducklake' AS dl1;
```

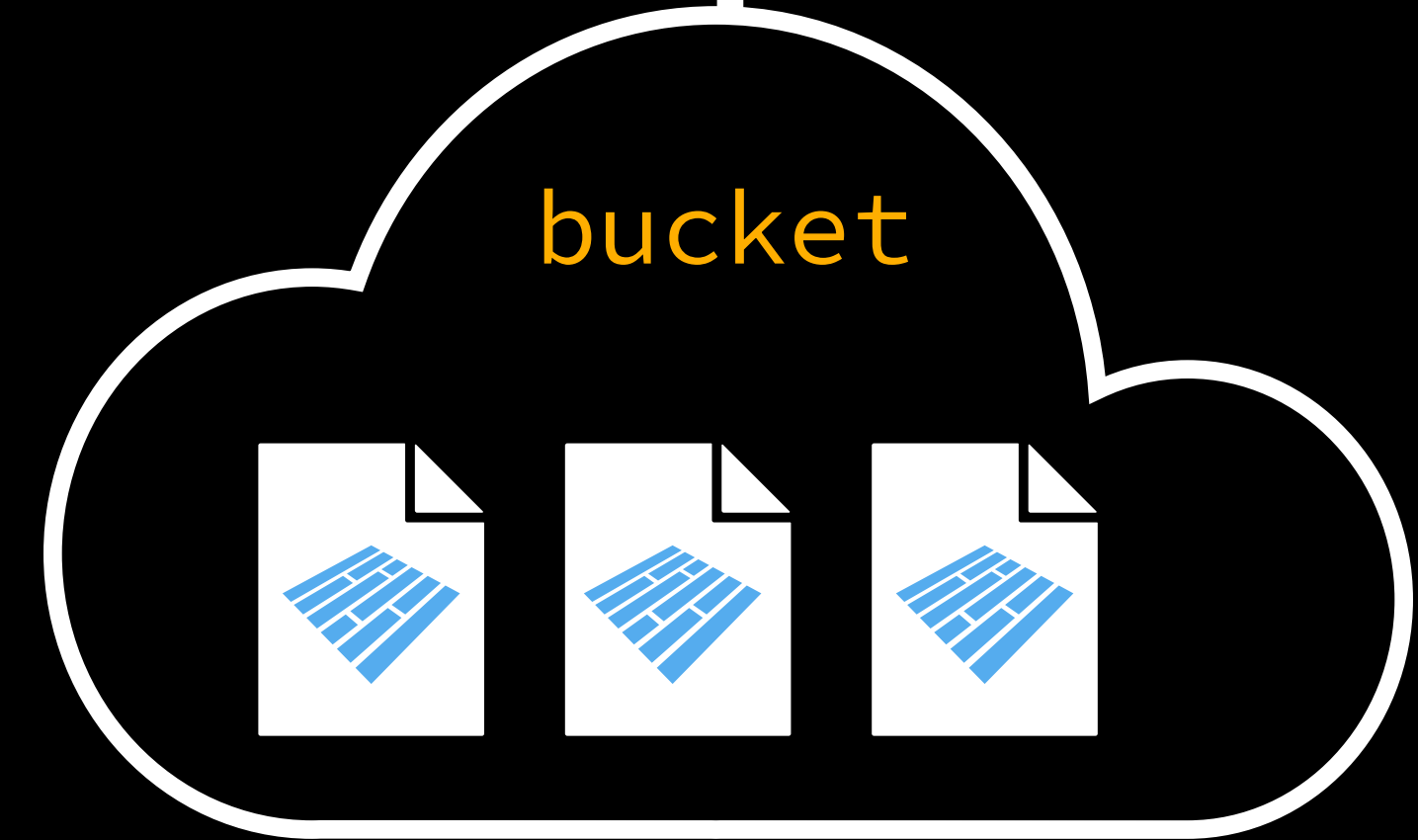


```
ATTACH 'ducklake:postgres:host=metadata' AS dl  
(DATA_PATH '/nfs/data_files/');
```

metadata

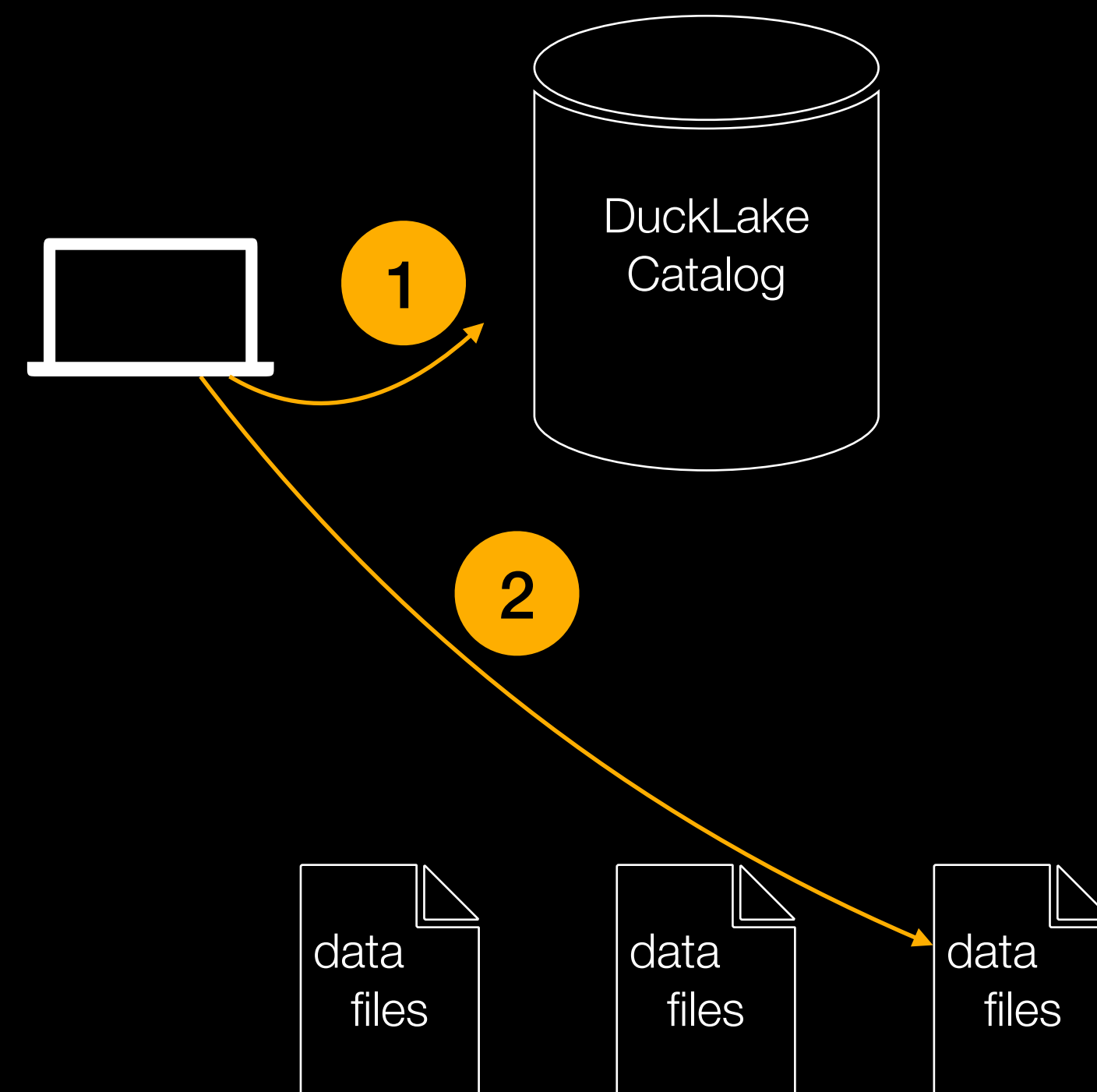
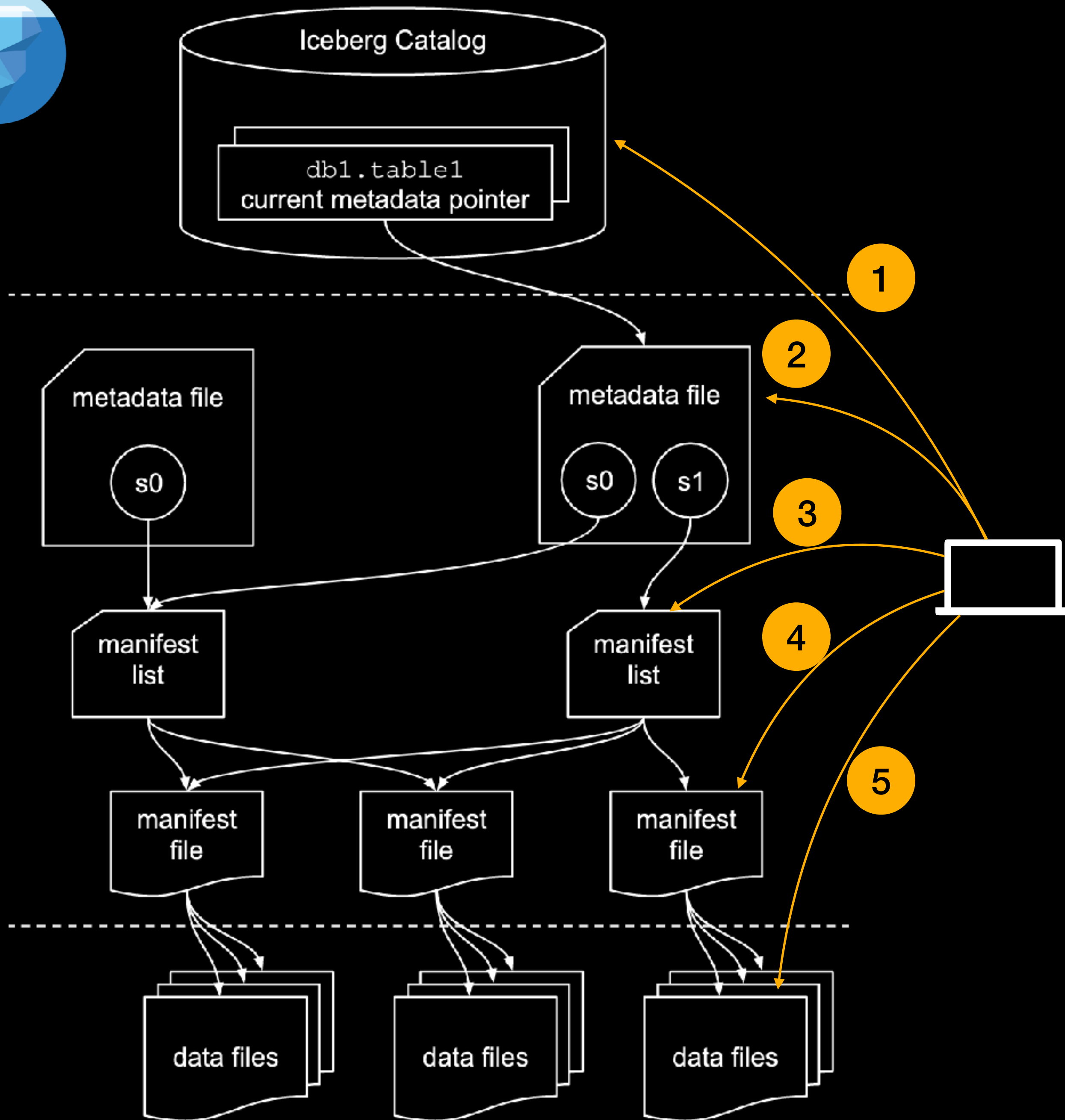
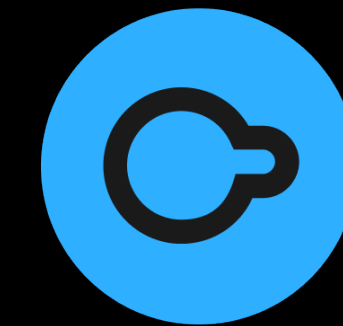


bucket



```
ATTACH 'ducklake:postgres:host=metadata'  
AS dl (DATA_PATH 's3://bucket/...');
```

Speed





- 1 **Petabyte** of data
- 10 Columns
- 100 M snapshots, 10 years
 - 270 GB/day

Planning Time	DuckDB	Postgres
Insert	~5ms	~3ms
Select All Files	~0.8s	~200s
Select 1 Month	~0.25s	~0.25s
Select 1 Day	~0.25s	~0.25s





Multi-Table

```
ATTACH 'ducklake:metadata.ducklake' AS dl;
```

```
CREATE SCHEMA dl.s1;
```

```
CREATE TABLE dl.s1.t1 ...;
```

```
CREATE TABLE dl.s1.t2 ...;
```

```
...
```



Holistic Transactions

BEGIN

CREATE TABLE ...

ALTER TABLE ...

INSERT ... INTO t1

UPDATE t2 ...

DELETE FROM t3

COMMIT



Inlining

```
ATTACH 'ducklake:metadata.ducklake' AS dl  
(DATA_INLINING_ROW_LIMIT 100);
```



Time Travel

```
FROM tbl AT (VERSION => 3);  
FROM tbl AT (TIMESTAMP => ...);
```



Change Feed

```
ATTACH 'ducklake:metadata.ducklake' AS dl;  
FROM dl.table_changes('tbl', 3, 4);
```



Encryption

```
ATTACH 'ducklake:metadata.ducklake' AS dl  
  (DATA_PATH '/some/untrusted/location' ENCRYPTED);
```



Interoperability





Free





Standard <>
Implementation



```
$ curl install.duckdb.org | bash  
$ ~/.duckdb/cli/latest/duckdb  
► ATTACH 'ducklake:metadata.ducklake' AS dl1;
```



DuckLake

ducklake.select
hannes.muehleisen.org

