

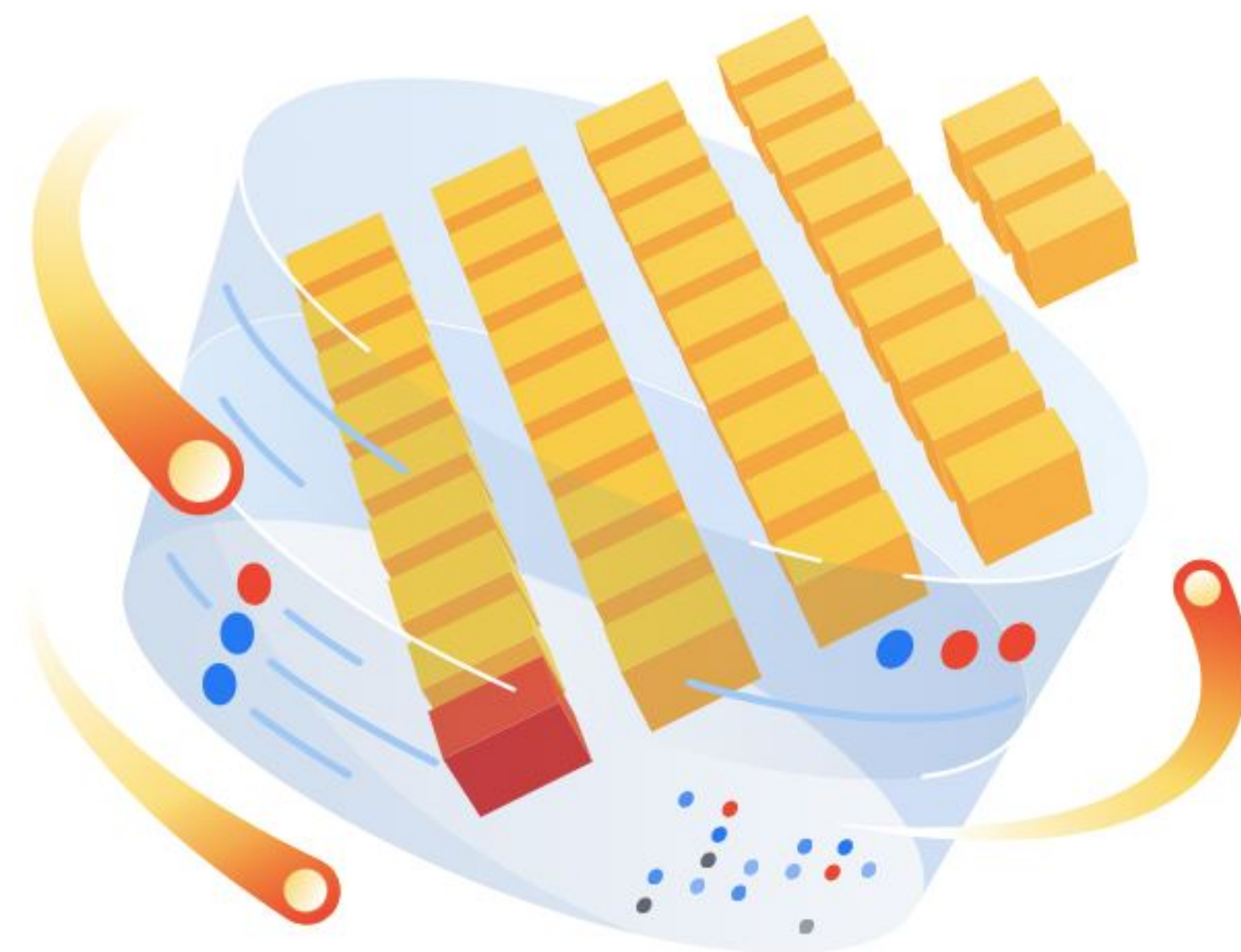
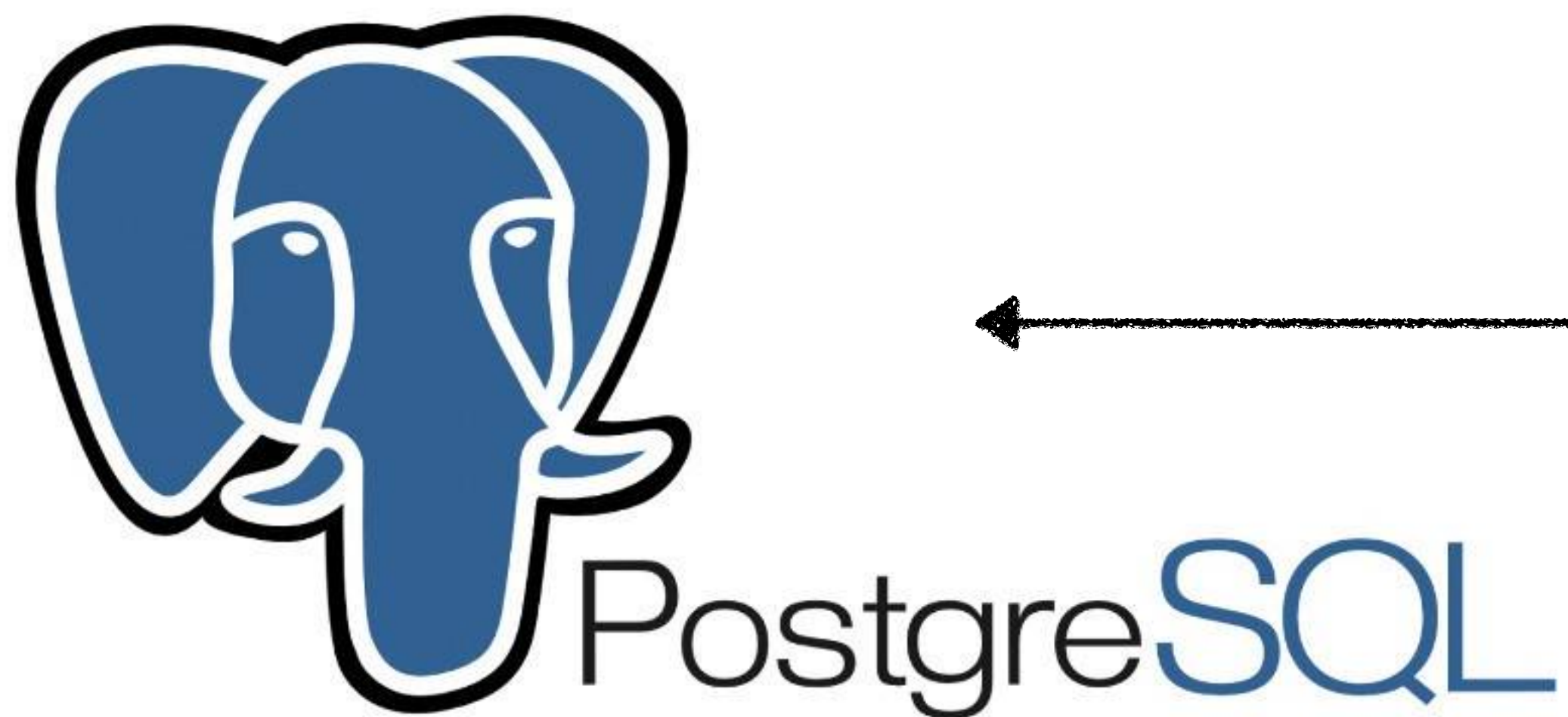


# Интеграция ClickHouse с PostgreSQL

Сумарокова Ксения

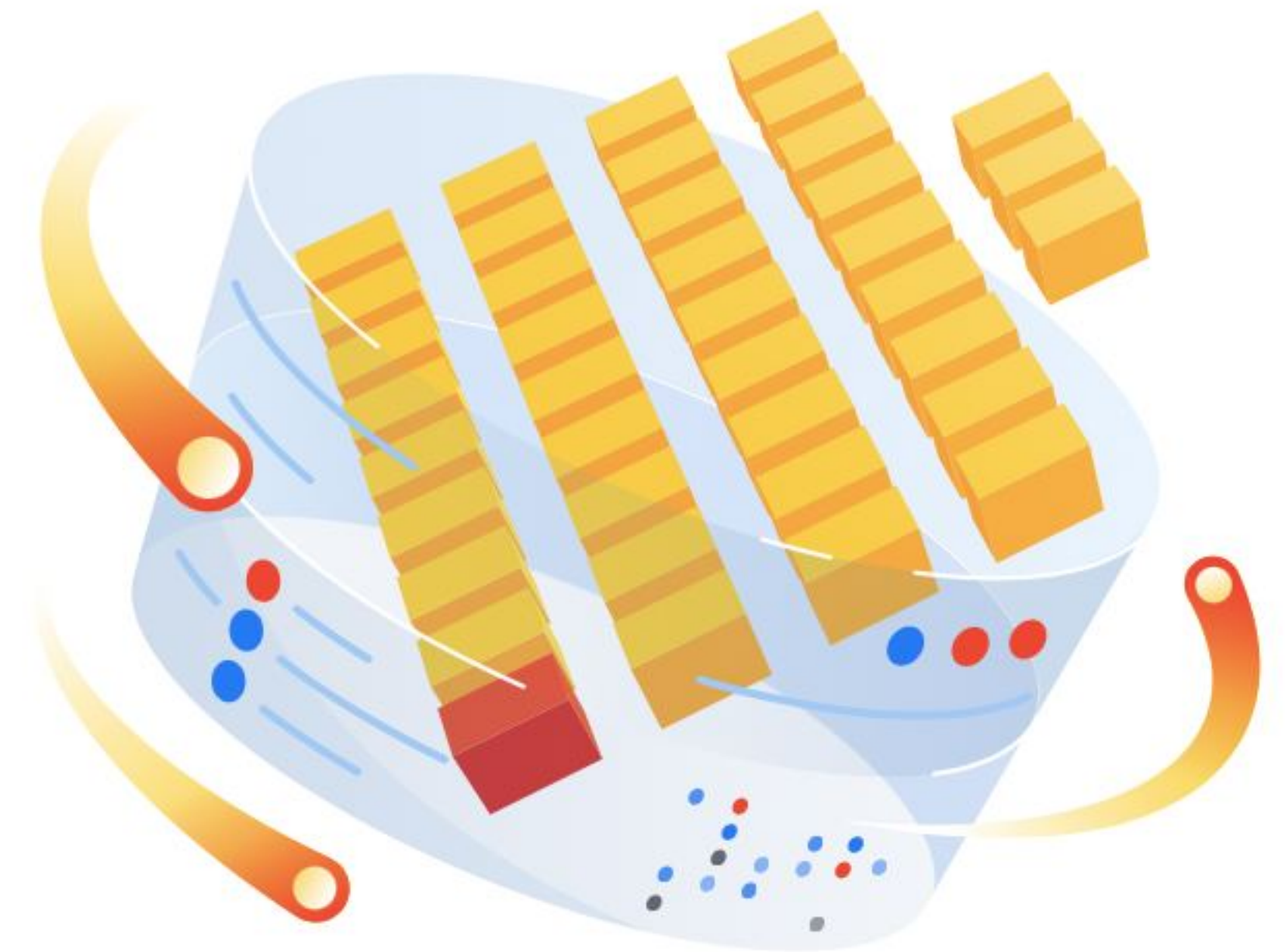
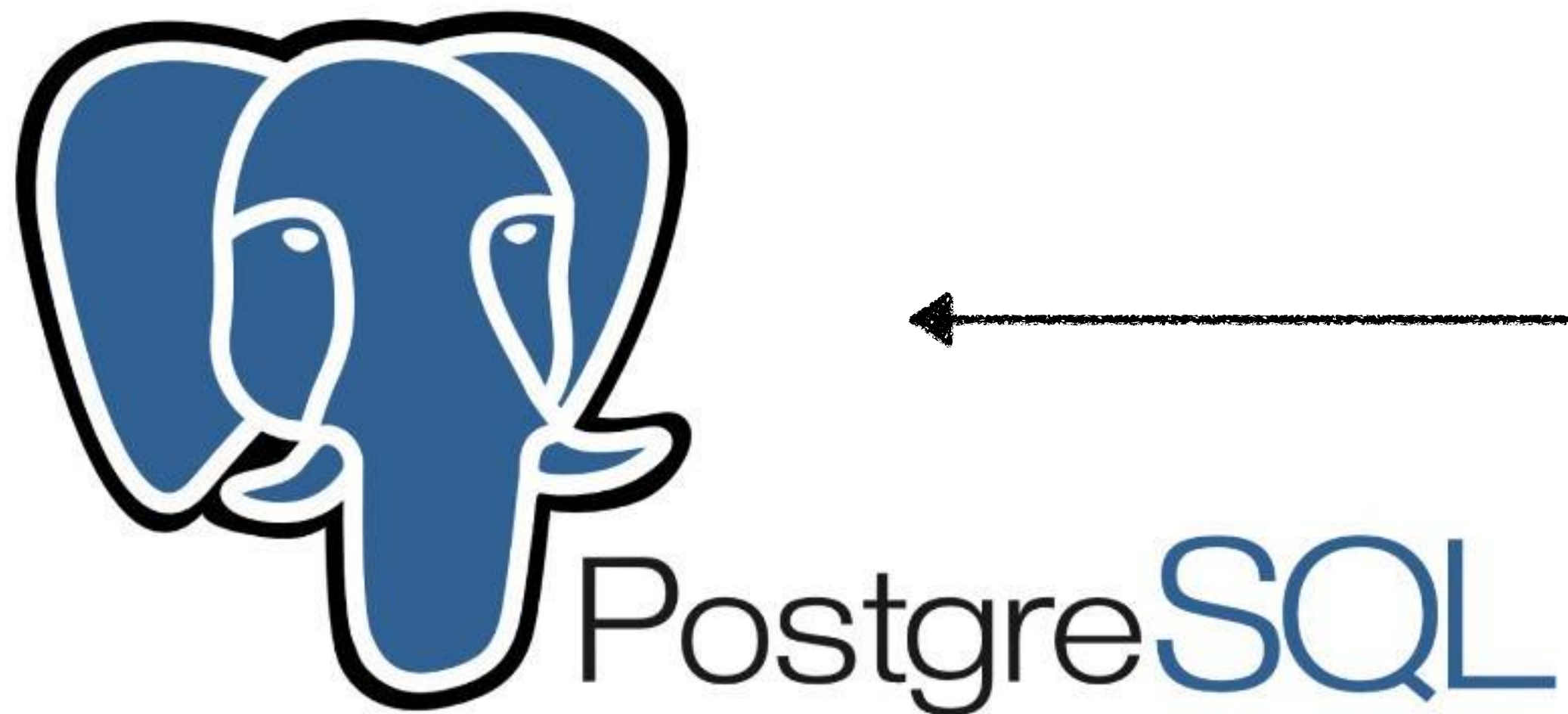


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- › PostgreSQL table engine
- › PostgreSQL dictionary source
- › PostgreSQL table function
- › PostgreSQL database engine





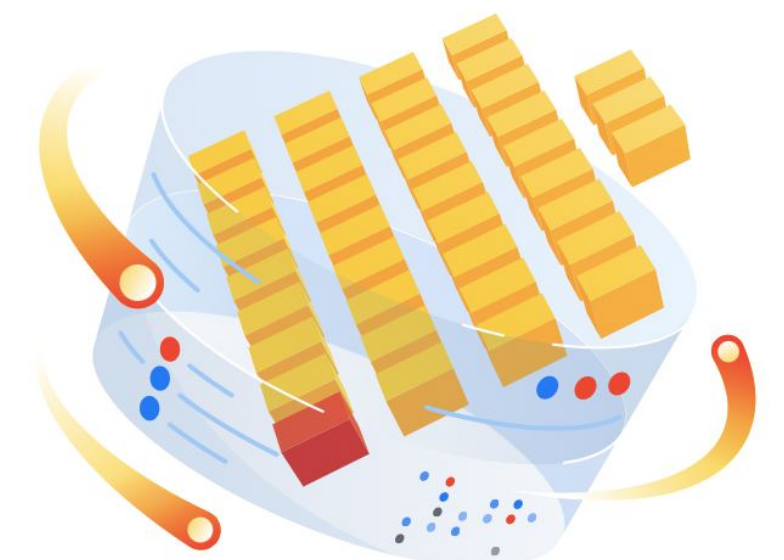


## › PostgreSQL table engine

```
CREATE TABLE pg_table (key UInt32, value String)  
ENGINE = PostgreSQL('localhost:5432', 'db_name', 'table_name', 'user', 'password');
```

## › PostgreSQL dictionary source

```
SOURCE(POSTGRESQL(  
  db 'db_name'  
  table 'table_name'  
  host 'localhost'  
  port 5432  
  user 'clickhouse'  
  password 'clickhouse'  
))
```

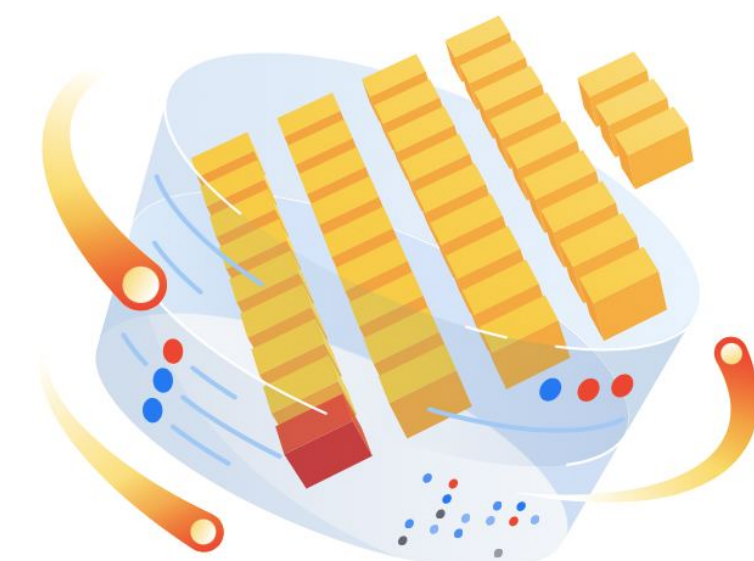




```
SELECT * FROM postgresql('localhost:5432', 'db_name', 'table_name', 'user', 'password')
```

```
INSERT INTO TABLE FUNCTION postgresql('localhost:5432', 'db_name', 'table_name', 'user', 'password')  
VALUES (...);
```

› + поддержка многомерных массивов





```
> SELECT * FROM odbc('DSN=postgres_connection', 'test_database', 'test_table') ;
```

9995	5K3aRbXxvjy0gUKequNNyQeFTTr3f8rWZ5o6R402TGNGYnL5QR6Q35aKBuVuc2yAUsfYcQbtPfe6hcjEBxQQjDrRU7f3vuaPvPt1C
9996	PsrSYEC9NtxVXQG3DKMrMWRxQrJQ8BCJ4tGAPYj1FZt9t0cAqXHpamHQ3bAFYqJP3I4JcsednRCIDGAGisJx5qv0X9meWI1Xwtyp
9997	6yWMY488s9NLwAsyAz02TILICxHlWJYBbjjdRMrnu0zeJyvSSfjPpCUK89oF4mWQnR8V8Qs0S1PEPtAFkDSB5LvI8hnI8HAcjVA
9998	2mFVK2EUCfq0NbsNmvo0MNC8QvWziVVAJTZjzEYA1m5cFJlHV5dik45V8pZH1Ucs7EZgVzk1XKg9Lb8sXdtD1JjAK8J49cVwyXT6
9999	bNtfGQ6Mrzj5nxAm0EeBkLpKTAGdk21H3JIsEYEdtgfoQsBdj97sPukK8V808uIMtzAztTH7bm5tF7tzLj42zMJGcQRc0vIvITkA
10000	WPCS8FNL66f5edX5Ika2yJHG6qku5iFETQoZP3Wq2ytL8iA1hqQARwMZGPksyw11ApbHbBeaL8jbMuKUXIRDoFdnA4jYhPkmsw8s

Shown first 10000.

10000000 rows in set. Elapsed: 121.185 sec. Processed 10.00 million rows, 1.15 GB (82.52 thousand rows/s., 9.49 MB/s.)

```
> SELECT * FROM postgresql('localhost:5432', 'test_database', 'test_table', 'postgres', 'postgres');
```

9995	5K3aRbXxvjy0gUKequNNyQeFTTr3f8rWZ5o6R402TGNGYnL5QR6Q35aKBuVuc2yAUsfYcQbtPfe6hcjEBxQQjDrRU7f3vuaPvPt1C
9996	PsrSYEC9NtxVXQG3DKMrMWRxQrJQ8BCJ4tGAPYj1FZt9t0cAqXHpamHQ3bAFYqJP3I4JcsednRCIDGAGisJx5qv0X9meWI1Xwtyp
9997	6yWMY488s9NLwAsyAz02TILICxHlWJYBbjjdRMrnu0zeJyvSSfjPpCUK89oF4mWQnR8V8Qs0S1PEPtAFkDSB5LvI8hnI8HAcjVA
9998	2mFVK2EUCfq0NbsNmvo0MNC8QvWziVVAJTZjzEYA1m5cFJlHV5dik45V8pZH1Ucs7EZgVzk1XKg9Lb8sXdtD1JjAK8J49cVwyXT6
9999	bNtfGQ6Mrzj5nxAm0EeBkLpKTAGdk21H3JIsEYEdtgfoQsBdj97sPukK8V808uIMtzAztTH7bm5tF7tzLj42zMJGcQRc0vIvITkA
10000	WPCS8FNL66f5edX5Ika2yJHG6qku5iFETQoZP3Wq2ytL8iA1hqQARwMZGPksyw11ApbHbBeaL8jbMuKUXIRDoFdnA4jYhPkmsw8s

Shown first 10000.

10000000 rows in set. Elapsed: 16.843 sec. Processed 10.00 million rows, 1.15 GB (593.73 thousand rows/s., 68.28 MB/s.)



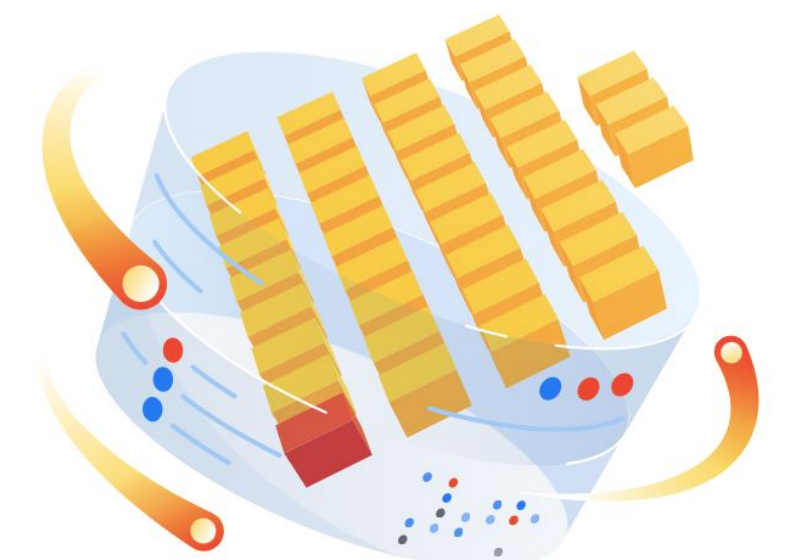


PostgreSQL database engine

```
CREATE DATABASE pg_database  
ENGINE = PostgreSQL('localhost:5432', 'db_name', 'table_name', 'user', 'password');
```

```
SELECT * FROM pg_database.pg_table;
```

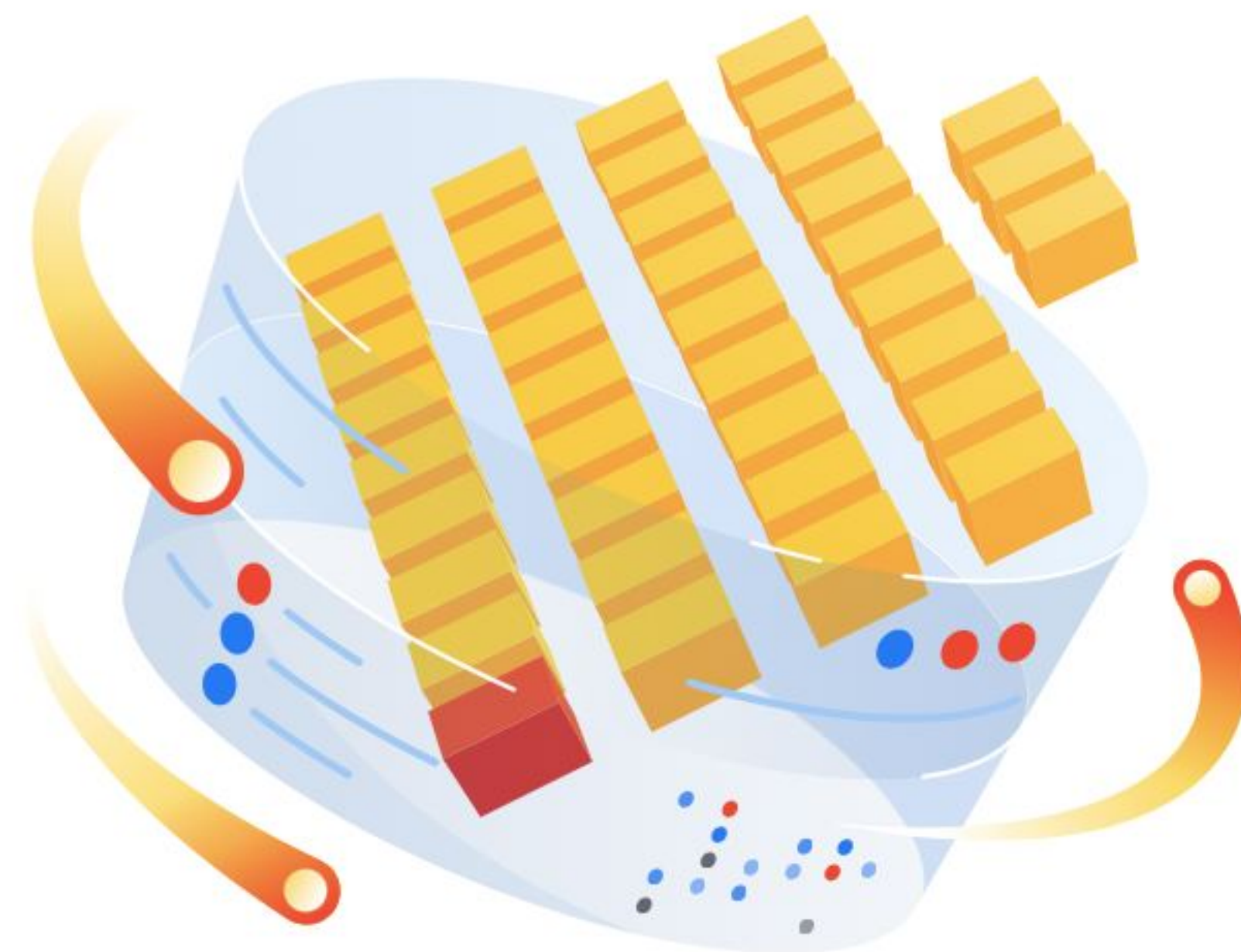
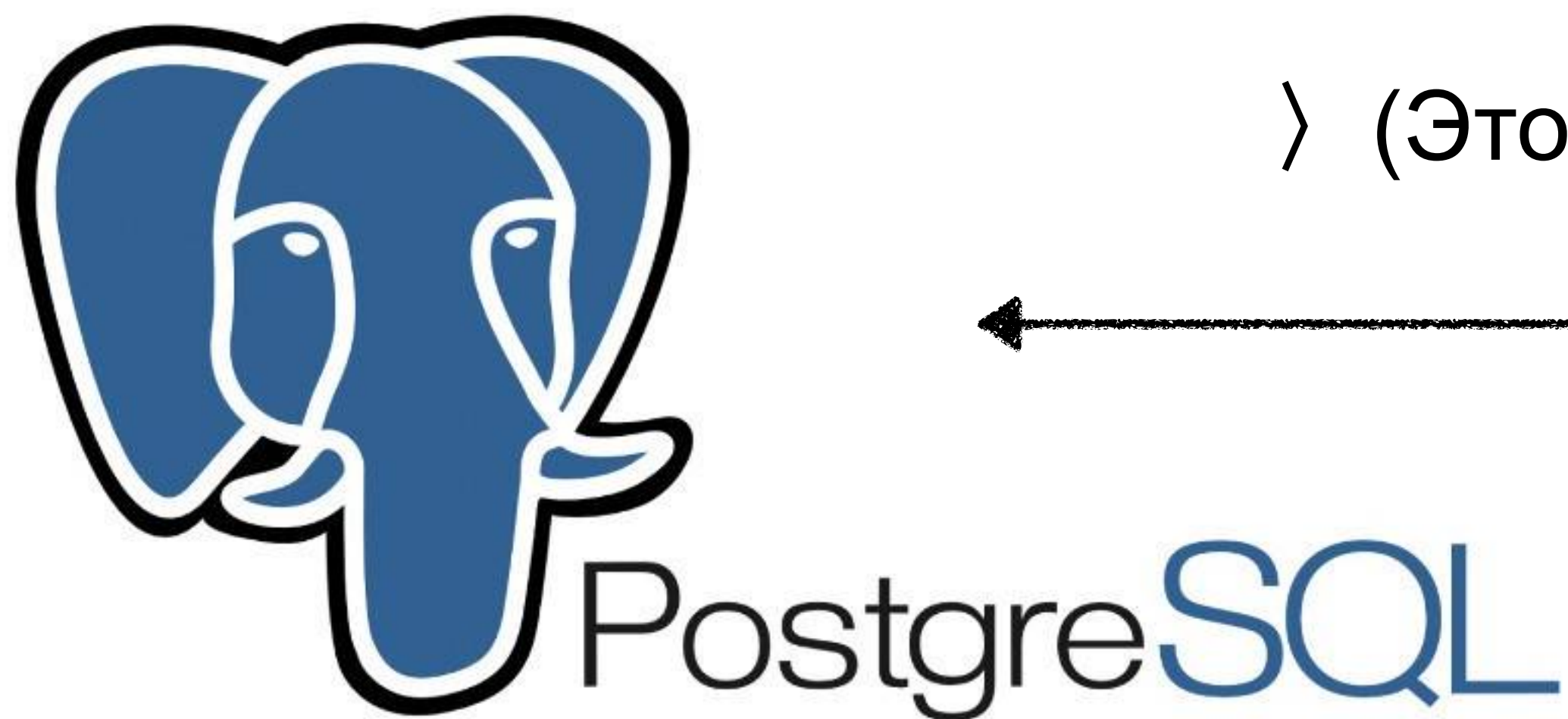
```
INSERT INTO pg_database.pg_table VALUES (...);
```





???

› (Это не все)

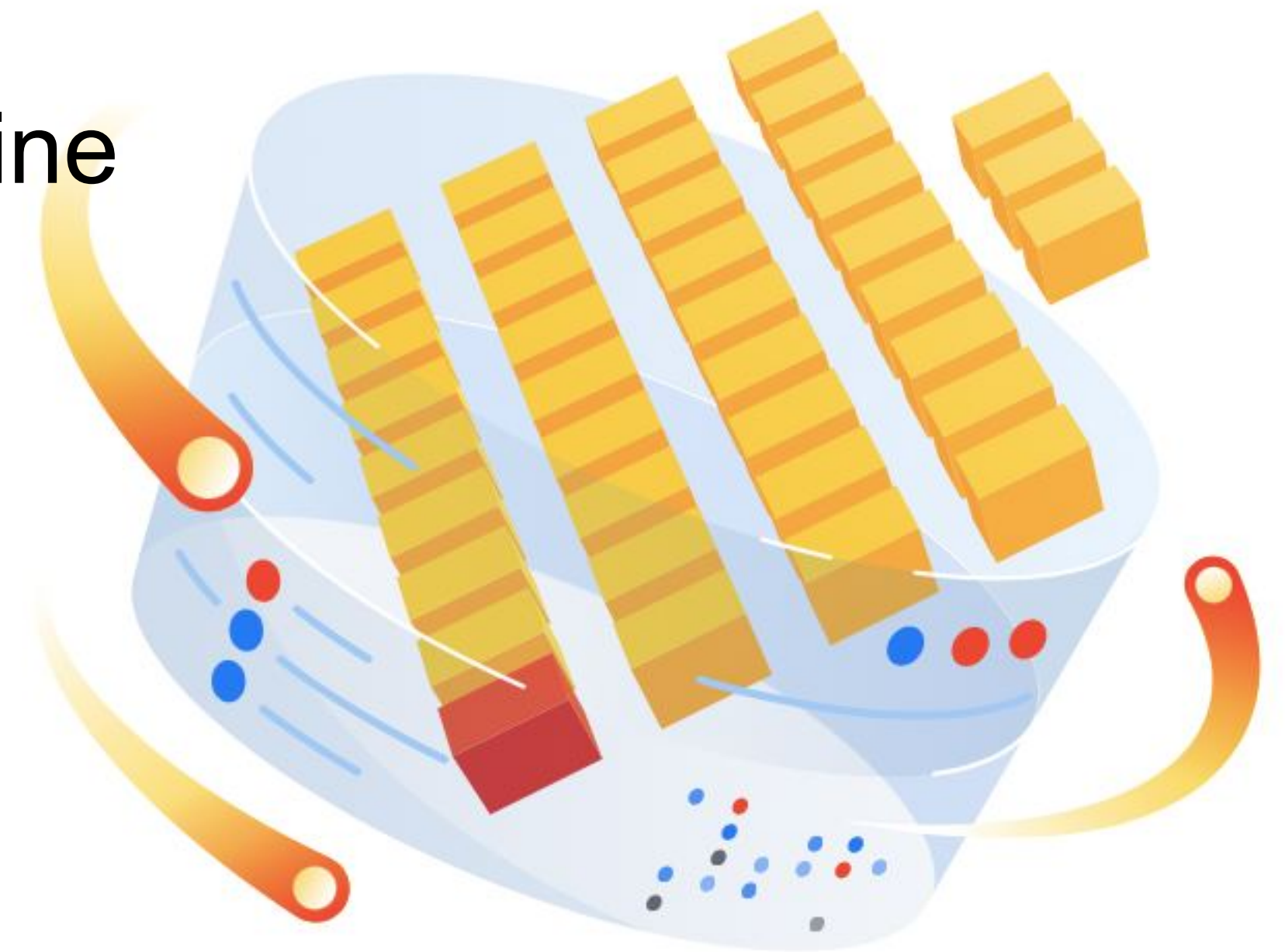
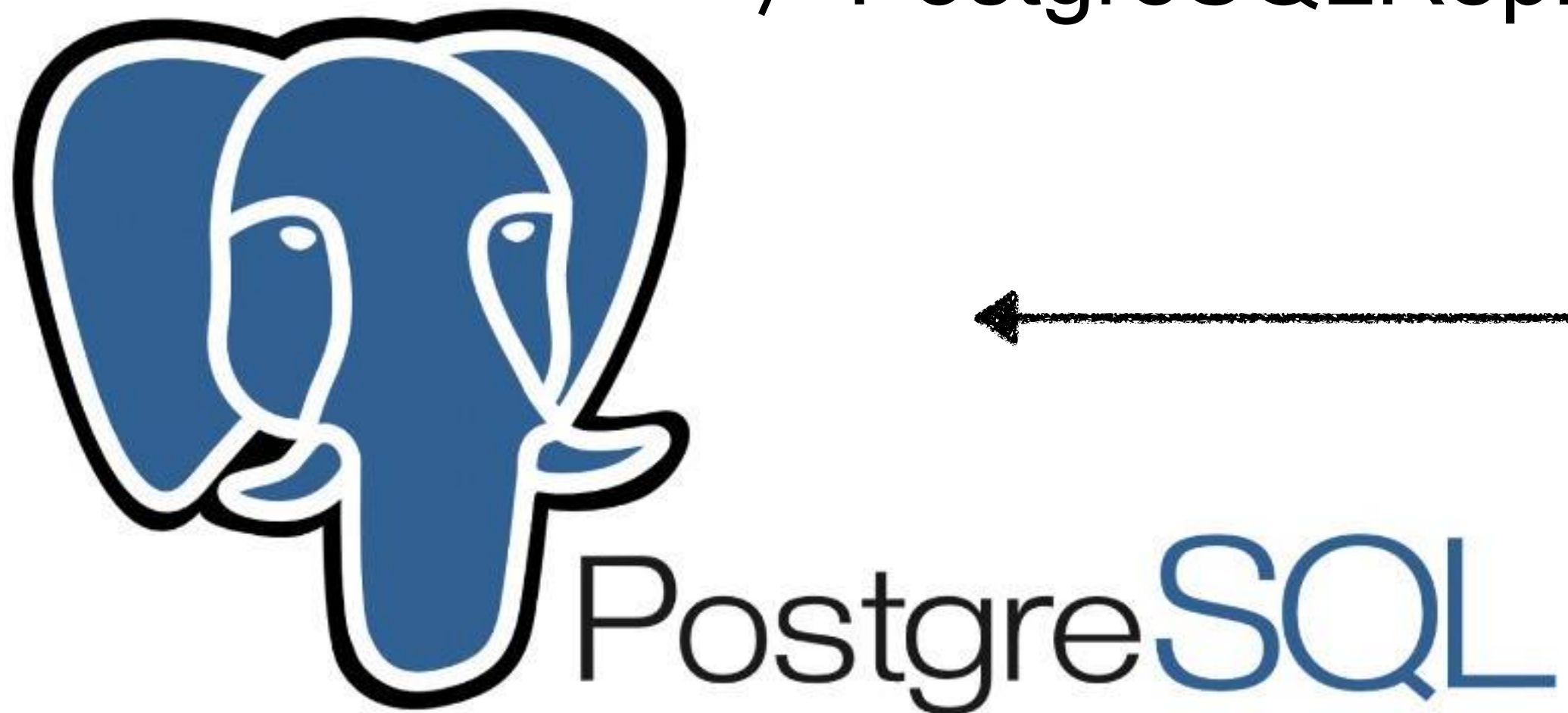


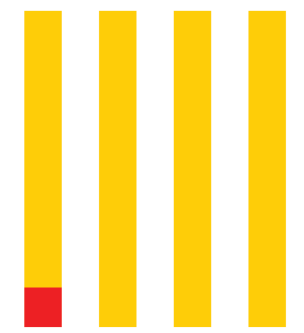




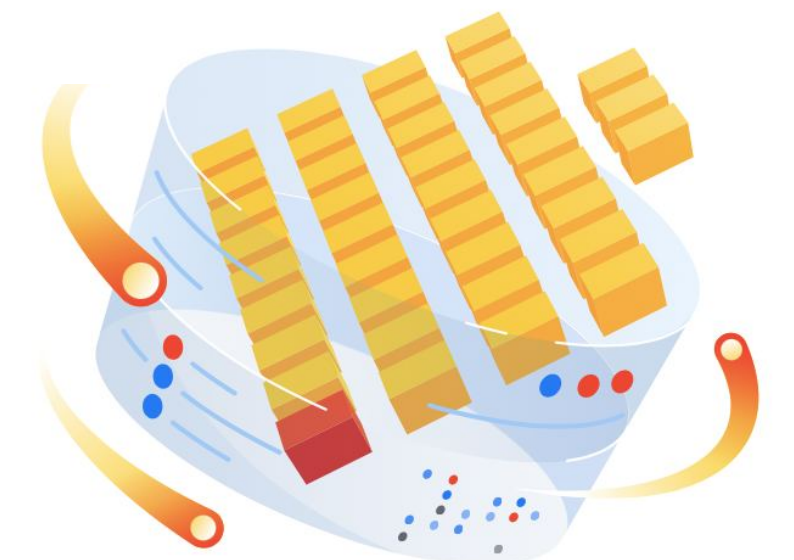
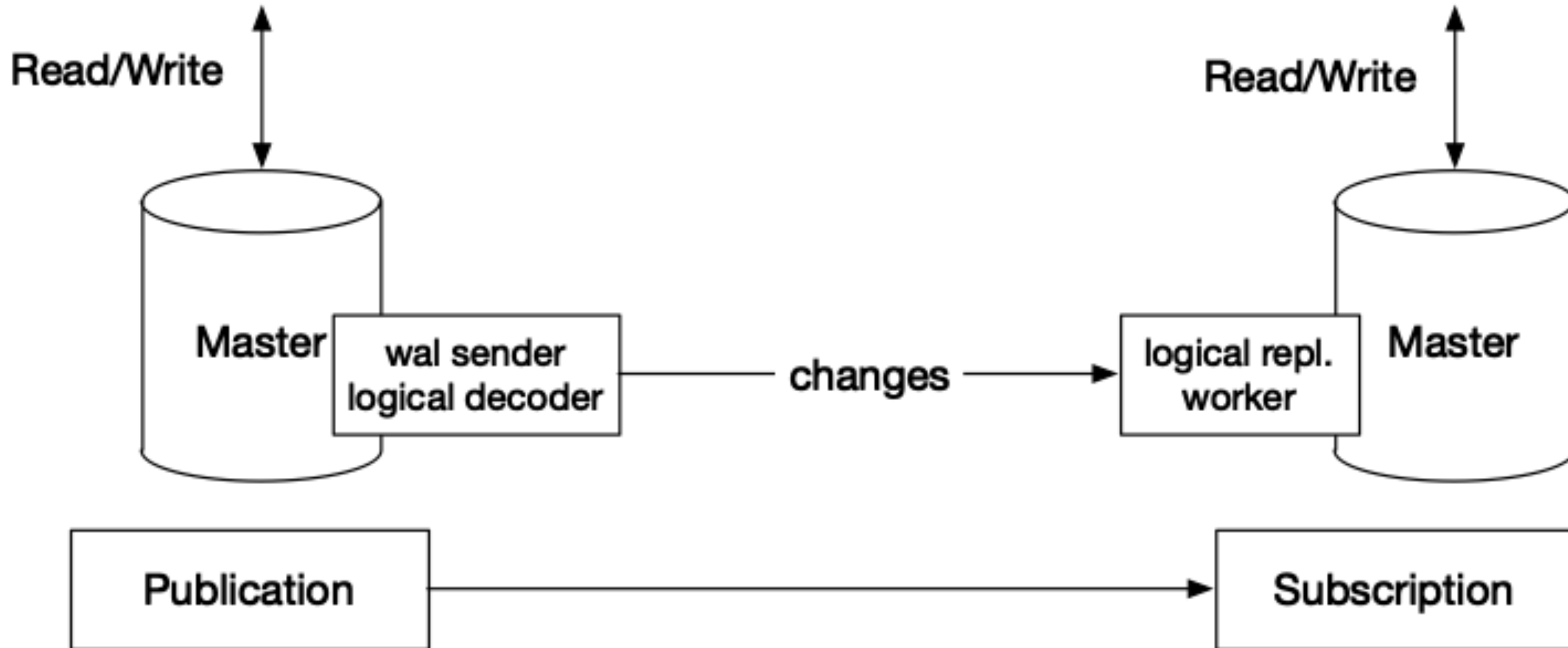
**Soon...**

- › PostgreSQLReplica table engine
- › PostgreSQLReplica database engine

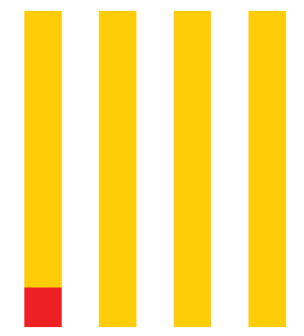




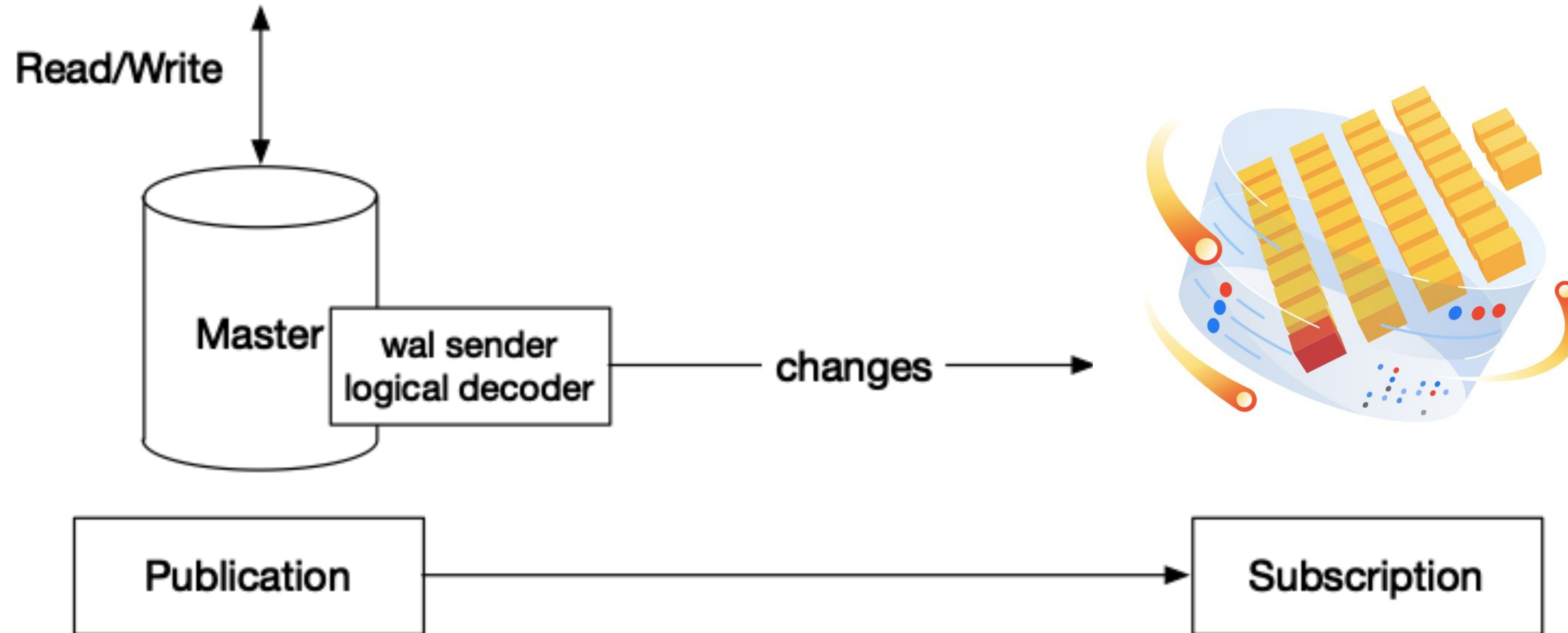
## ClickHouse > PostgreSQL logical replication







## ClickHouse > PostgreSQL logical replication



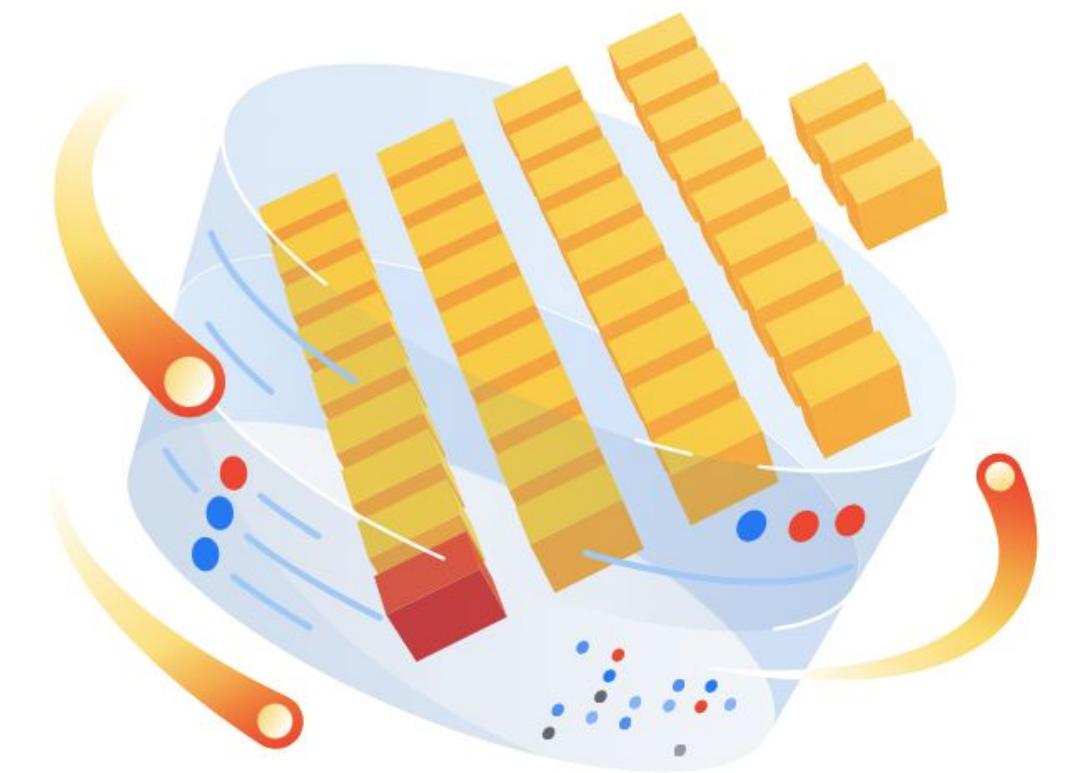
## ■ ClickHouse > PostgreSQL logical replication



- **DML** commands: insert, update, delete, truncate

Для database engine:

- whole database
- arbitrary table list (with setting `tables\_list = table1, table2, ...`)
- primary key, если его нет, то replica identity index







**:) the end.**