

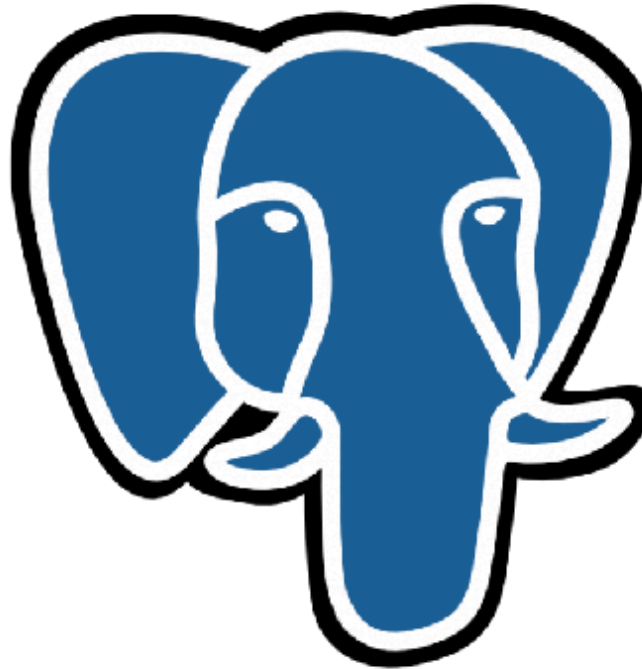
PostgreSQL SQL-MED

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- What?**
- Is an relational database management system (RDBMS)
 - Is a Object-Relation Database Management System(ORDBMS)

Licence PostgreSQL: Released under the PostgreSQL License. (Similar to the BSD or MIT)

- Why?**
- One of the finest open source relation database which has some object-oriented features.
 - PostgreSQL is free.
 - PostgreSQL is Open Source.
 - PostgreSQL Conform to the ANSI-SQL: 2008.
 - PostgreSQL is ACID (Atomicity, Consistency, Isolation and Durability) Complaint.



Support? There are many companies providing professional support for PostgreSQL.

- Who?**
- Web technology
 - Financial
 - No-SQL Workload
 - Small & Large Scale Business

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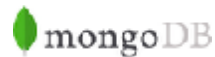
PostgreSQL

Accessing Data From Multiple Sources

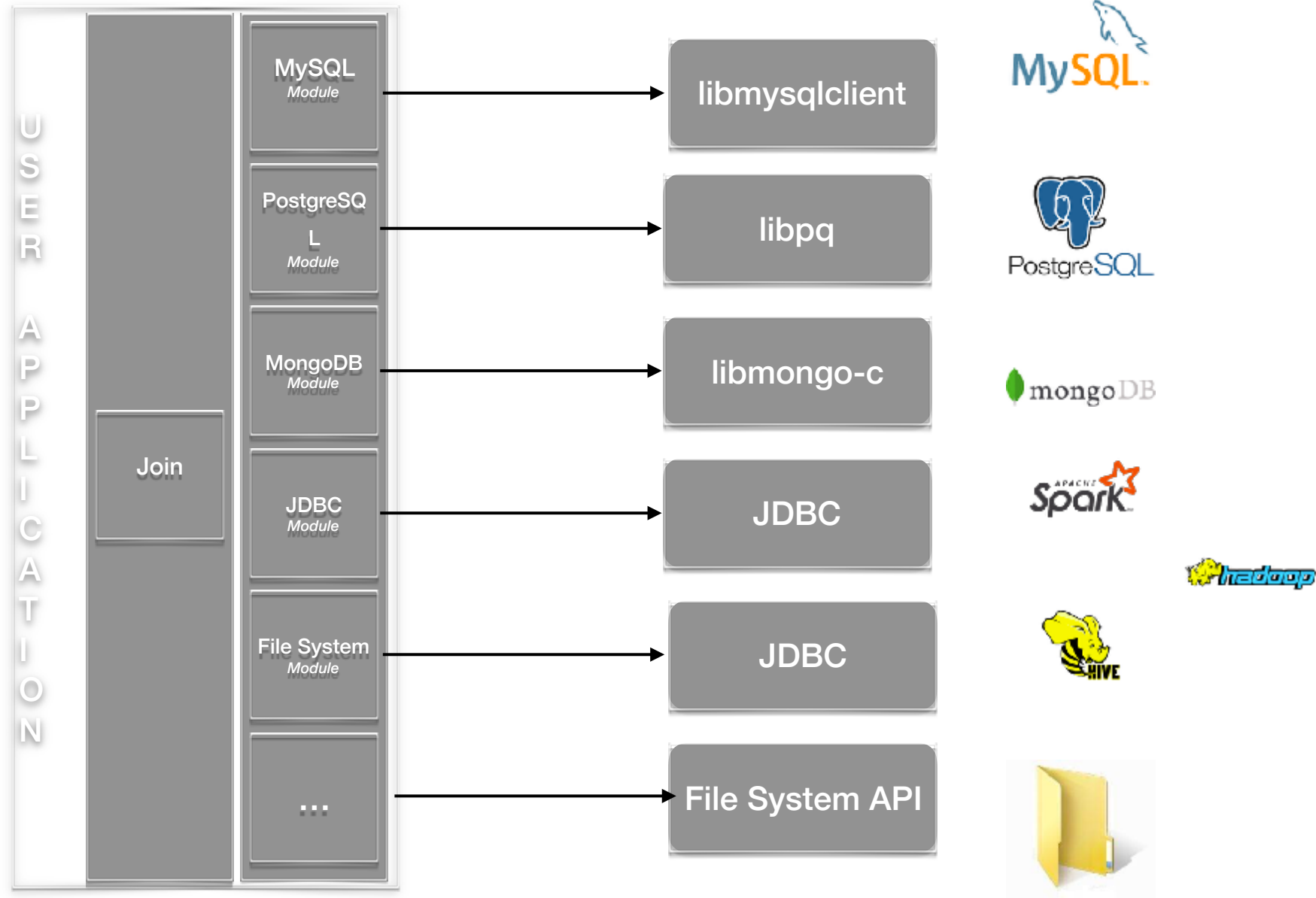
SELECT data from multiple “Database Engines” and generate results?

Is it possible within Database Engine

Is it possible?



Application Architecture 1/2



SQL-MED

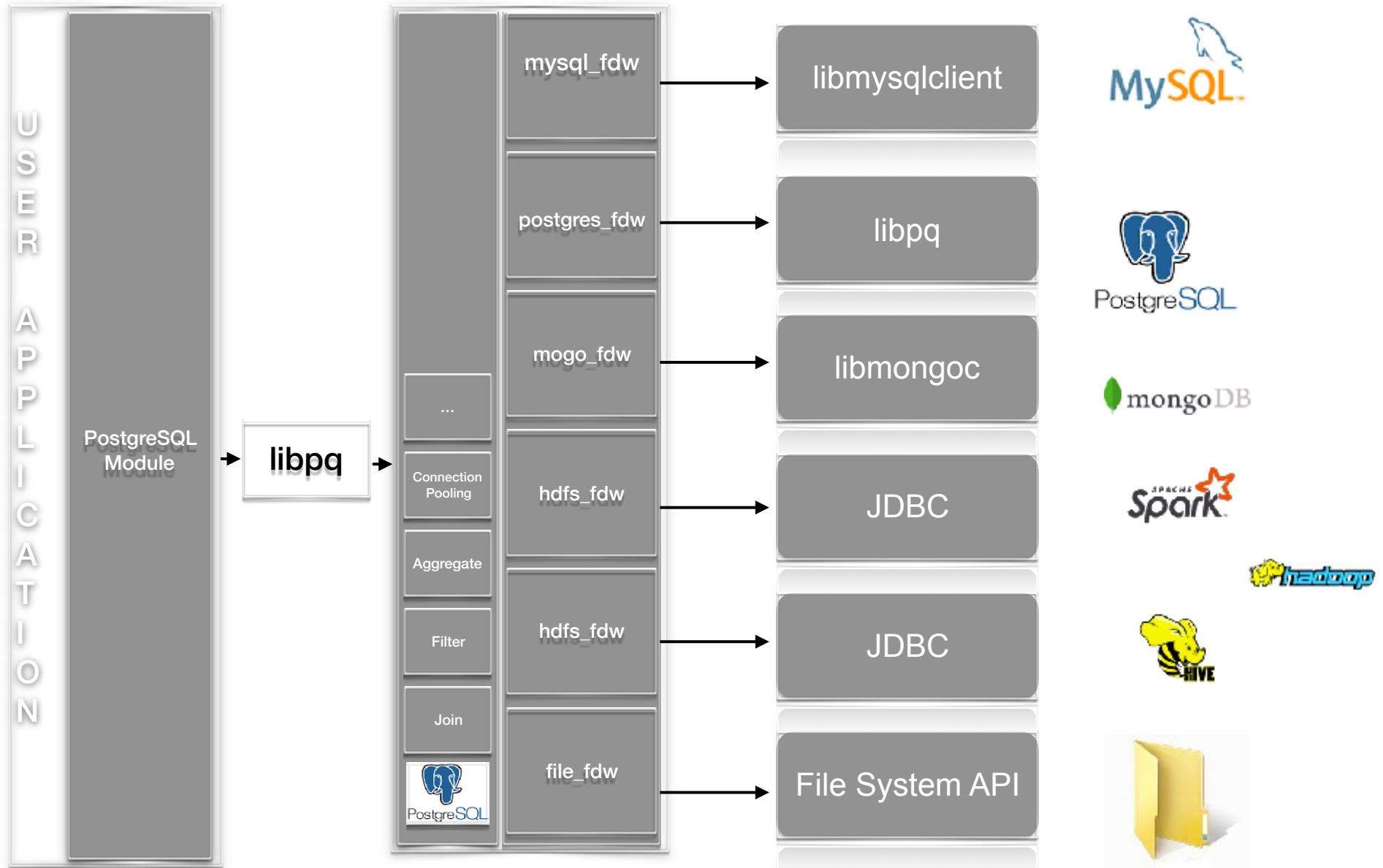
Management of External Data

- **SQL** standard, It is defined by ISO/IEC 9075-9:2008
- **SQL/MED** provides extensions to SQL that define **FDW** (Foreign Data Wrapper)
- PostgreSQL start implementing in its core since PostgreSQL version **9.1**
- PostgreSQL community builds its own few **postgresql_fdw**. *What do you mean by start implementing?*
- Now there are many FDW implemented by other people.

https://wiki.postgresql.org/wiki/Foreign_data_wrappers

Do we really need to implement separate extension?

Application Architecture 2/2



PostgreSQL Foreign Data Wrapper

- DML Support*
- Query Splitting
- Joins
- Aggregate
- Connection Pooling

PostgreSQL Foreign Data Wrapper Push Down

- Quals pushdown
- Joins Push Down
- Aggregate Push Down

PostgreSQL Foreign Data Wrapper Executing Query



```
SELECT * FROM mysql_tbl;
```



```
> db.mongo_tbl.find()
{ "_id" : ObjectId("5b64d9628365b615c035bcba"), "id" : 1, "data" : "Item" }
{ "_id" : ObjectId("5b64d97c8365b615c035bcbb"), "id" : 2, "data" : "Item-2" }
{ "_id" : ObjectId("5b64d9818365b615c035bcbc"), "id" : 3, "data" : "Item-3" }
```

```
• CREATE EXTENSION mysql_fdw;

• CREATE SERVER mysql_svr
  FOREIGN DATA WRAPPER mysql_fdw
  OPTIONS (host '127.0.0.1',
          port '5432',
          dbname 'db');

• CREATE USER MAPPING FOR postgres
  SERVER foreign_server
  OPTIONS (user 'mysql_user',
          password 'mysql_pass');

• CREATE FOREIGN TABLE mysql_tbl (
  id integer NOT NULL,
  data text
)
```

```
• CREATE EXTENSION mongo_fdw;

• CREATE SERVER mongo_svr
  FOREIGN DATA WRAPPER mongo_fdw
  OPTIONS (host '127.0.0.1',
          port '5432',
          dbname 'db');

• CREATE USER MAPPING FOR postgres
  SERVER mongo_svr
  OPTIONS (user 'mongo_user',
          password 'mongo_pass');

• CREATE FOREIGN TABLE mongo_tbl (
  id integer NOT NULL,
  data text
)
```

```
• SELECT count(*)
  FROM mysql_tbl AS mysql,
       mongo_tbl AS mongo
 WHERE mongo.id = mysql.id;
```



PostgreSQL

“It's not a faith in technology. It's faith in people.

– Steve Jobs