



**COMMUNIA**

The European Thematic Network on the Digital Public Domain



# Open source relational and object databases

François Déchelle, Creative Commons France / CERSA

# Databases: relational vs. object

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- relational databases:

  - datas are rows of columns of simple types (numbers, text, date, keys...) organized in tables

- object databases:

  - datas are objects containing simple types, other objects or references to other objects

# Relational databases : MySQL and PostgreSQL

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- the two big names of open source relational databases
- MySQL: big installed base (the M of LAMP), company support (MySQL SUN)... "the most popular"
- PostgreSQL: smaller installed base, community support... "the most advanced"

# EyeDB: an object database

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- open source (LGPL) since 2006
- developed initially for molecular biology
- ODMG compliant
- advanced object model: simple inheritance, polymorphism, references, collections, relations with integrity support
- large databases: terabytes, 100,000,000 objects

# EyeDB: defining schema with ODL

- ODL (Object Definition Language) is used to define the database schema: classes, attributes, relations...

```
class Person {
    attribute string firstName;
    attribute string lastName;
};
class Teacher extends Person {
    relationship set<Course *> courses inverse teacher;
};
class Course {
    attribute string title;
    relationship Teacher * teacher inverse courses;
};
```

# EyeDB: creating, querying... objects with OQL

- OQL (Object Query Language) is used to create objects, query, update, delete...
- Looks like SQL, but object

```
oodbms := new Course(title : "OODBMS");  
francois := new Teacher(firstName : "Francois",  
                          lastName : "Dechelle");  
oodbms.teacher := francois;  
select Teacher.firstname = "Francois";  
select x.teacher from Course x where x.title = "OODBMS";
```

# EyeDB: language bindings

- EyeDB provide language bindings for C++, Java, Python and PHP in preparation...
- EyeDB objects *are* C++, Java, Python... objects

```
void create(Database db) throws org.eyedb.Exception {
    Course oodbms = new Course(db);
    oodbms.setTitle("OODBMS");




    Teacher francois = new Teacher(db);
    francois.setFirstName("Francois");
    francois.setLastName("Dechelle");

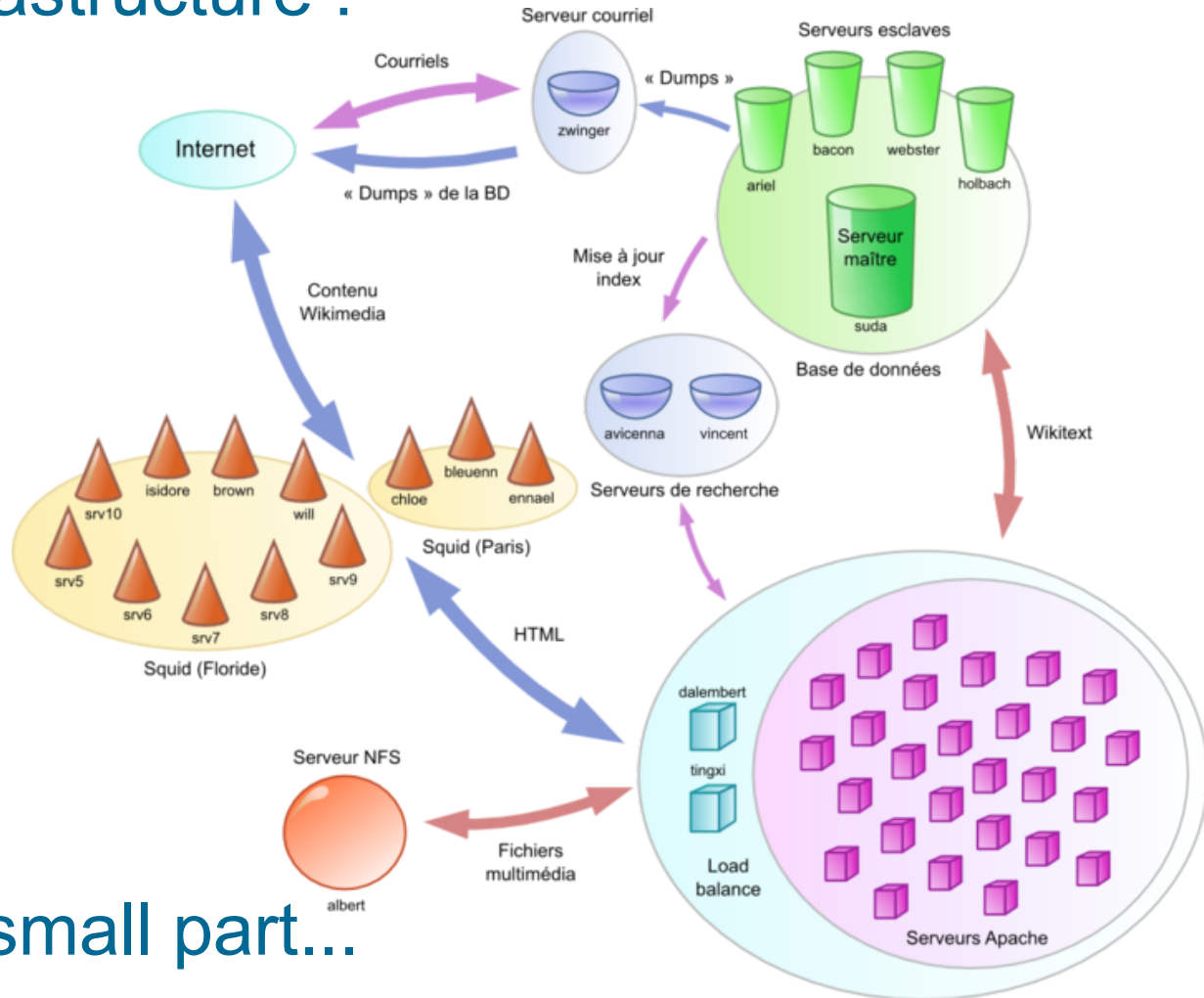
    oodbms.setTeacher( francois);

    francois.store(org.eyedb.RecMode.FullRekurs);
}
```

# Databases and content management systems

## Wikipedia technical infrastructure :

-  web server (Apache)
-  web cache (Squid)
-  database (MySQL)



The database is only a small part...