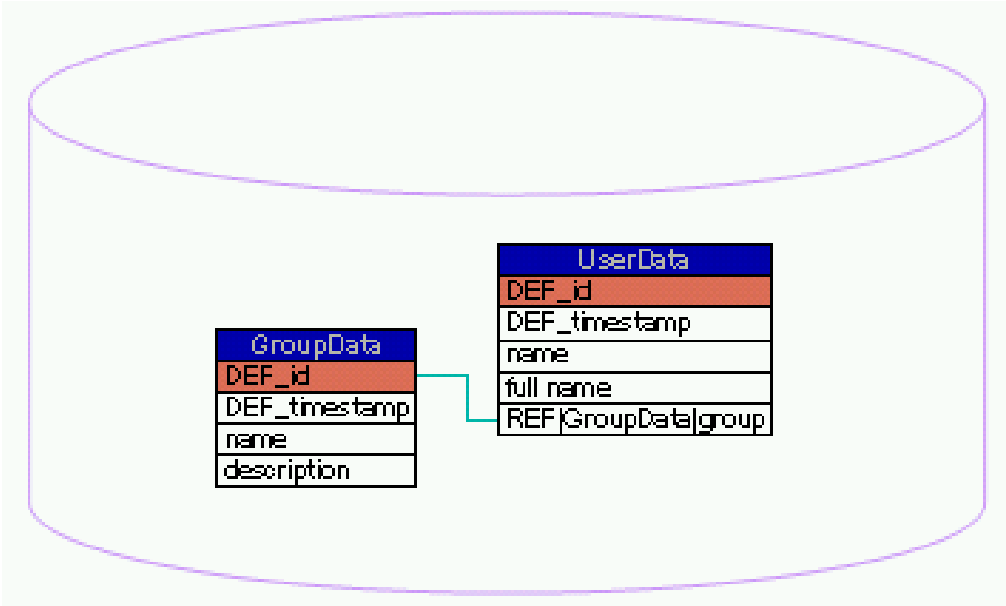
What does the database need to do?



- **Storage** of a large amount of data,
- **Speed** and flexibility to add/access data,
- **Share** data between applications,
- **Data keeper**

How to Query?

- dbemtools, Web based interfaces (Image Viewer, ...)
- Sinedon
- SQL client

Sinedon

✓ Sinedon is a simple way to define an **O**bject **R**elational **M**apping between Python objects and MySQL, a relational database management system

✓Associates a table with a class or a subclass.

✓Defines relationships between objects.

✓Multiple databases can be used

✓Generated database is normalized (Primary keys, indexes, unique row)

✓ the SQL level is completely transparent to the user, only an empty database is needed.

Sinedon

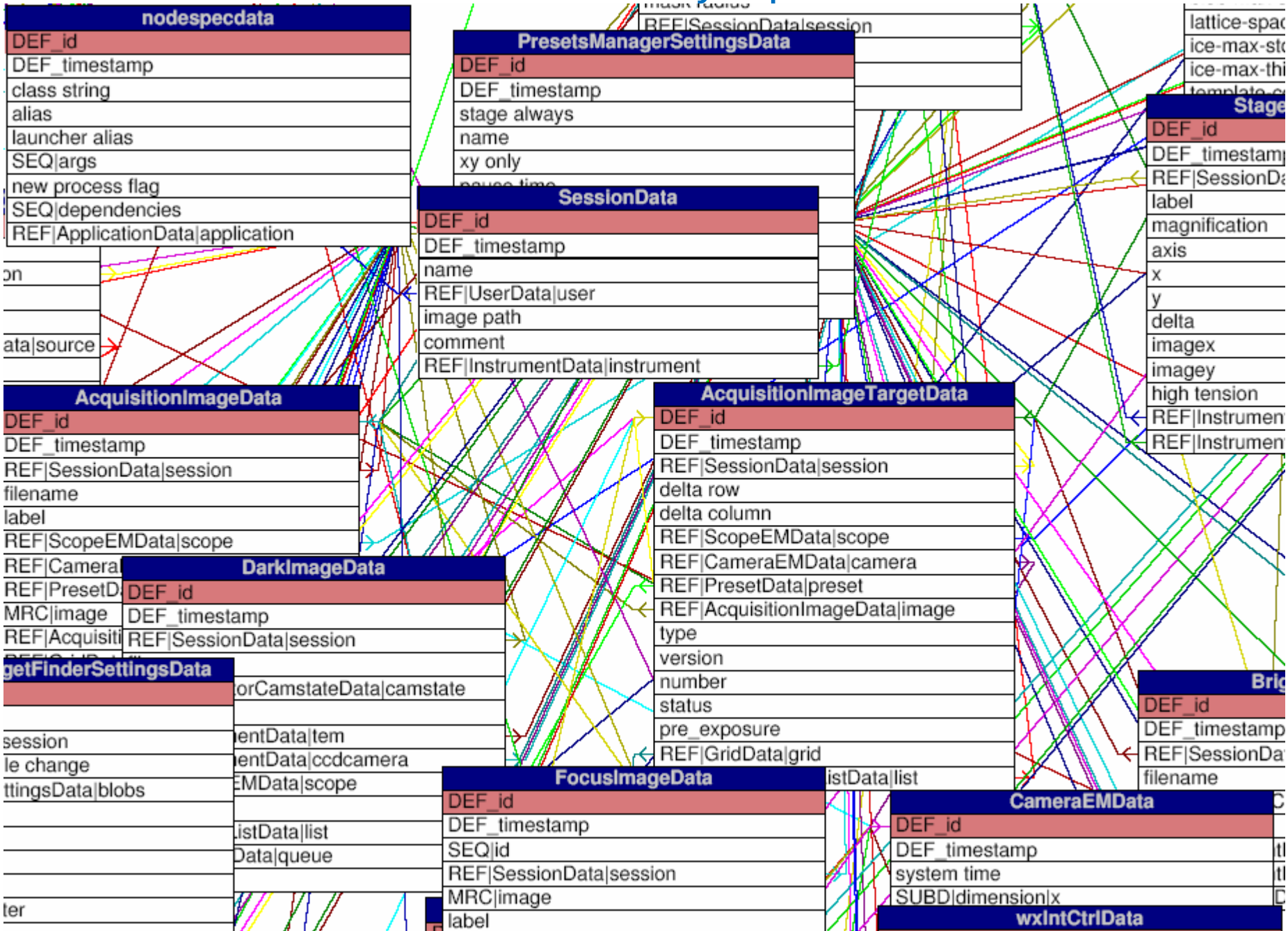
This is a simple example showing some subclasses of sinedon.Data.
Each class will correspond to a table in a database.
The fields (columns) of the table are defined by the **typemap** class attribute.

```
import sinedon

class Group(sinedon.Data):
  def typemap(cls):
    return sinedon.Data.typemap() + (
    ('name', str),
    ('description', str),
  )

class User(sinedon.Data):
  def typemap(cls):
    return sinedon.Data.typemap() + (
    ('name', str),
    ('username', str),
    ('group', Group),
  )
```

Sinedon Query

```
### create instance of User with a reference to an instance of Group ###

import      mydata

g = mydata.Group(name='AMI', description='Automated Molecular Imaging Group')
u = mydata.User(name='Bob', group=g)

# Recursively insert a new row into each table
u.insert()

 # Query
results = u.query()
```

Database Synoptic

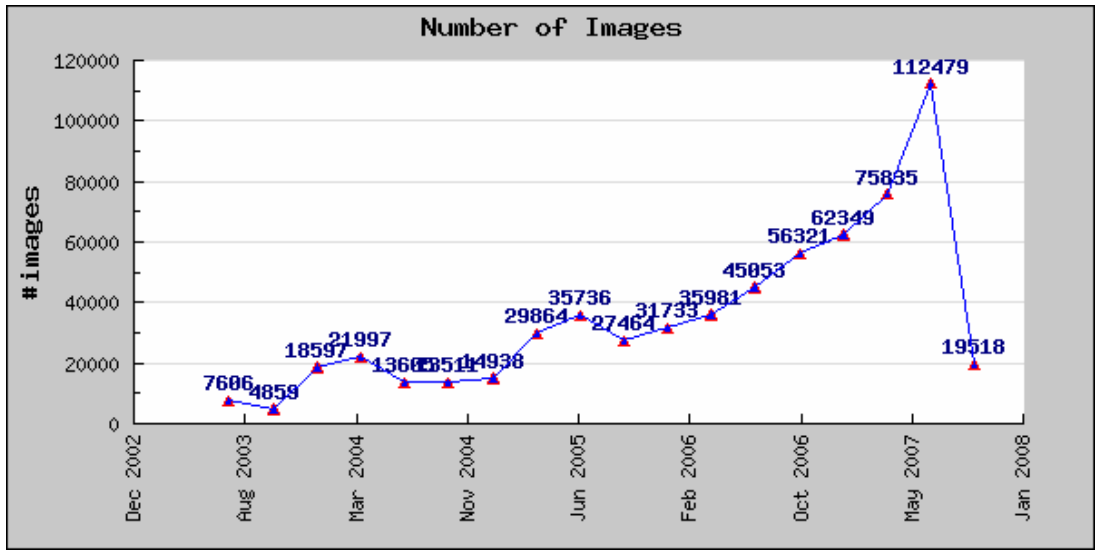


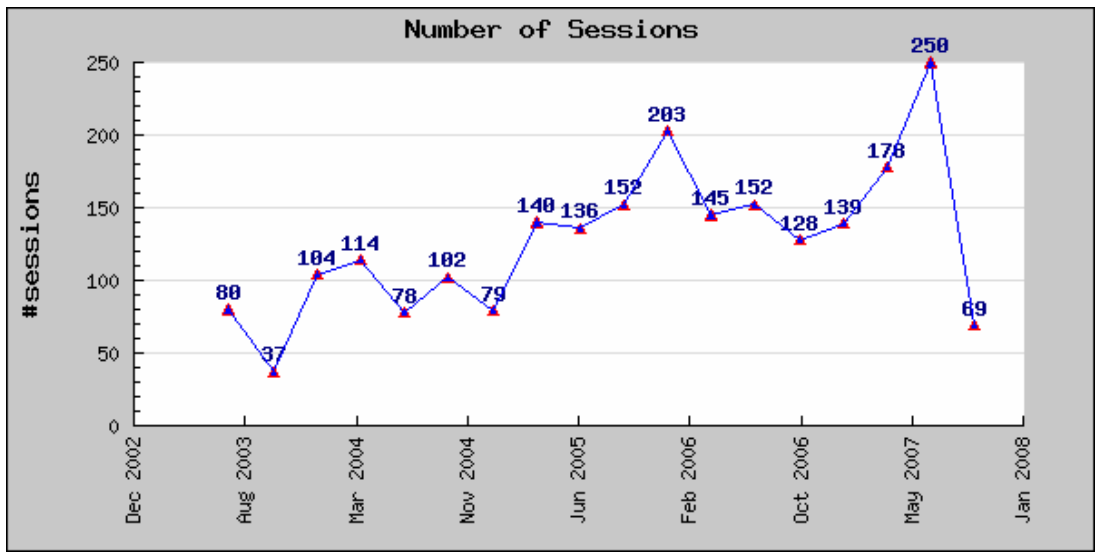
Database in 2007

Image records:	**594,506**
Experiment records:	**2891**
Experiment Size:	**15,082,558,053 kB**

	Total Cell	Tables	Data	Indexes	Total	
dbemdata	162,355,637	183	905.3 MB	651.4 MB	**1.5**	**GB**
processing	663,741,994	50	3.2 GB	2.9 GB	**6.2**	**GB**

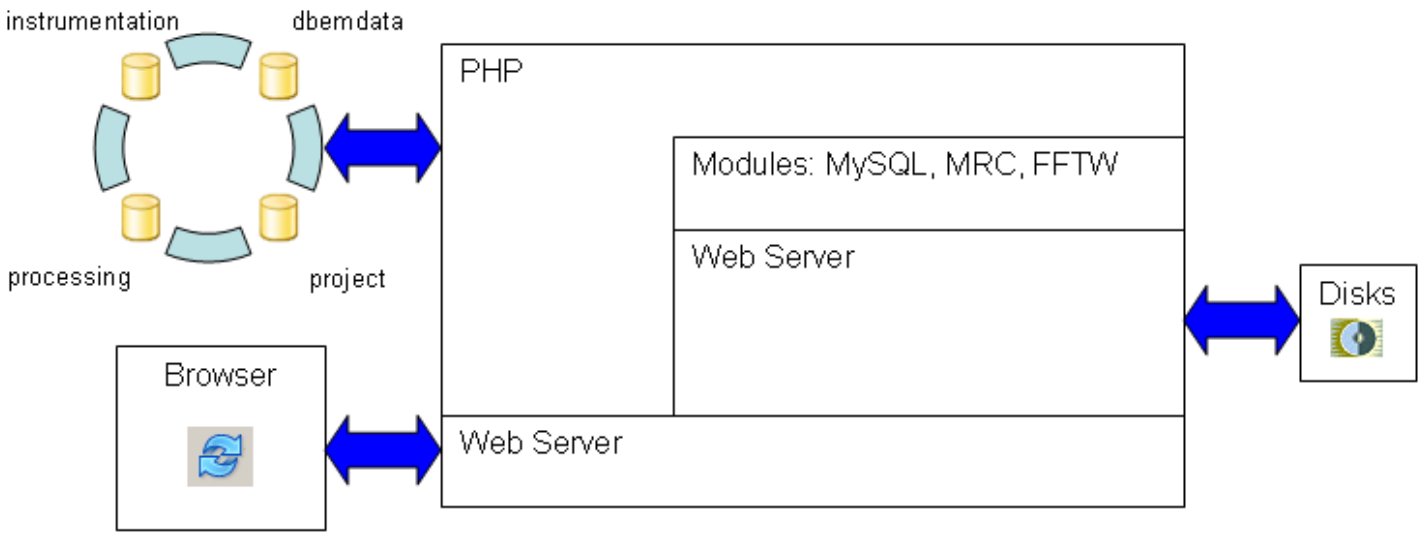
Database in 2007



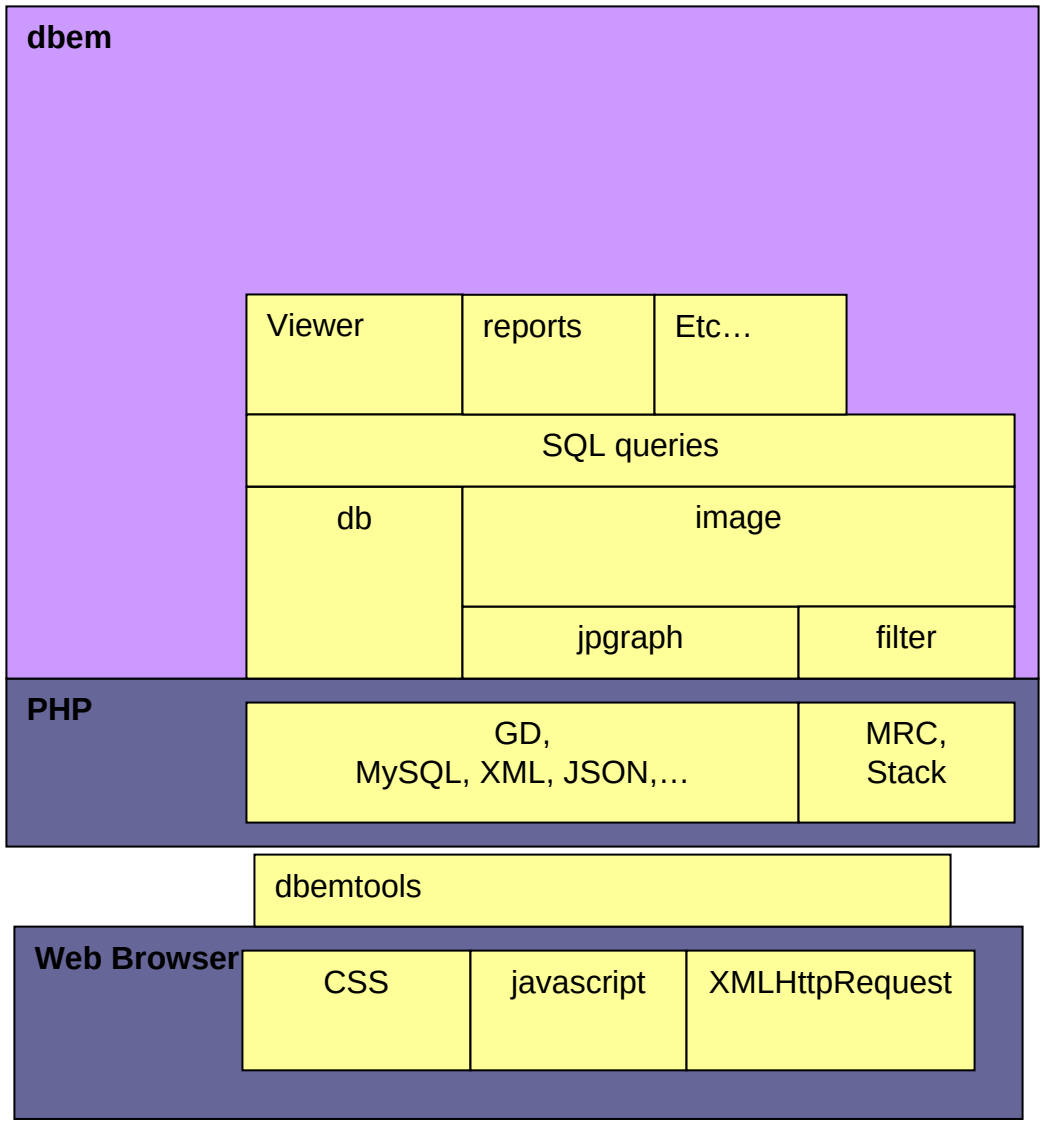


Web based principle

- **L**inux
- **A**pache
- **M**ySQL
- **P**HP/Python



Web based principle



Demo