Documentation for the PYROS software

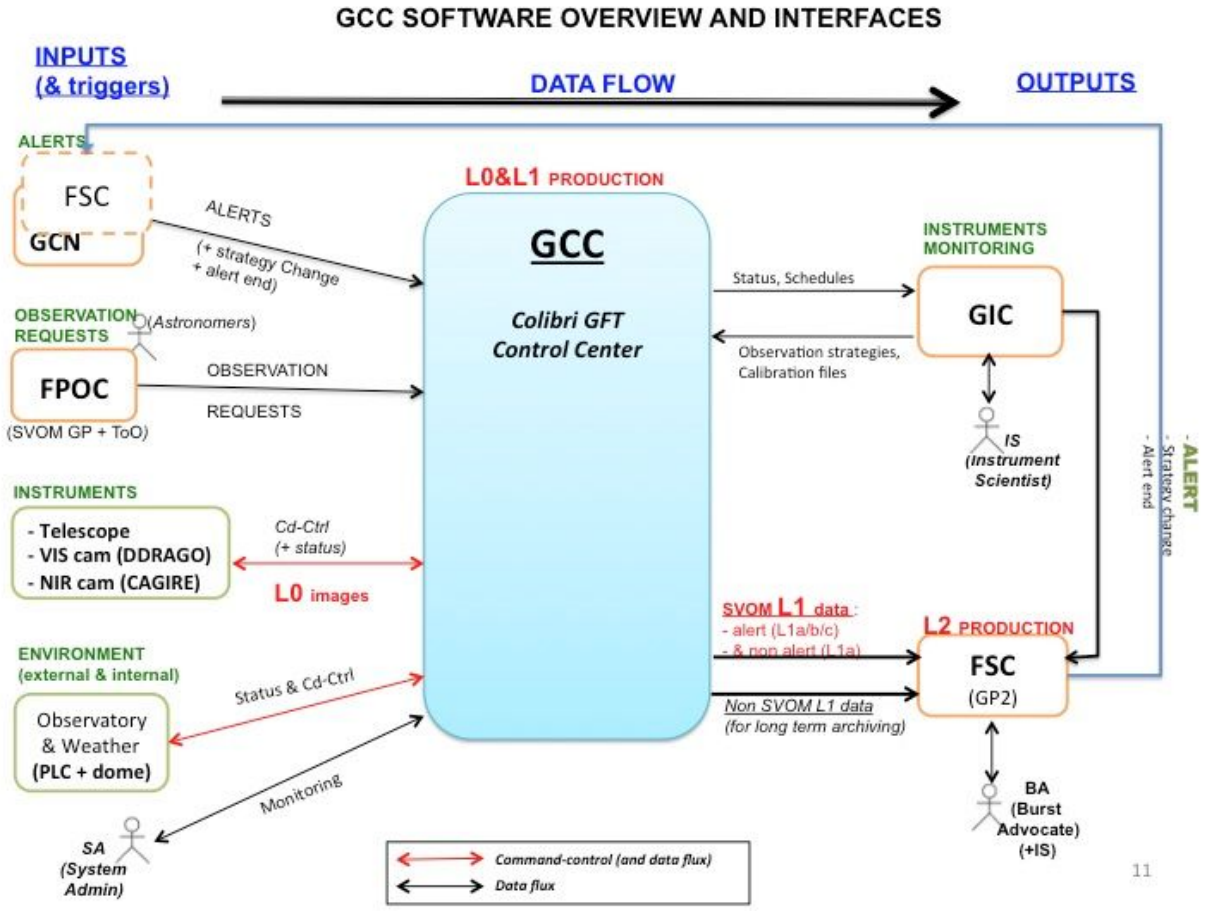
COLIBRI/GCC OGS (Observatory & Observations Control Software)

Version : 25/1/18

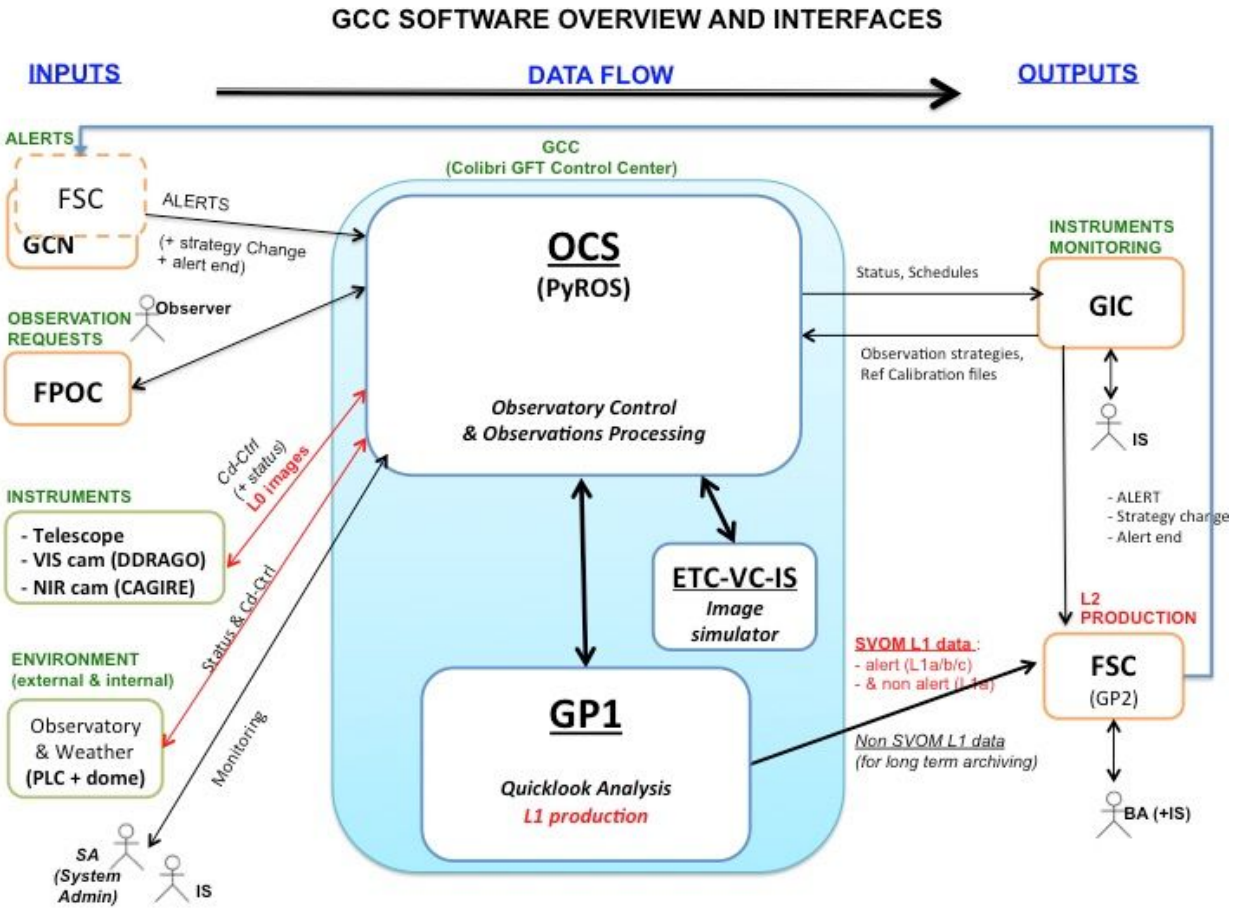
Please display the outline for this document : menu **View/Show document outline**

1. Architecture

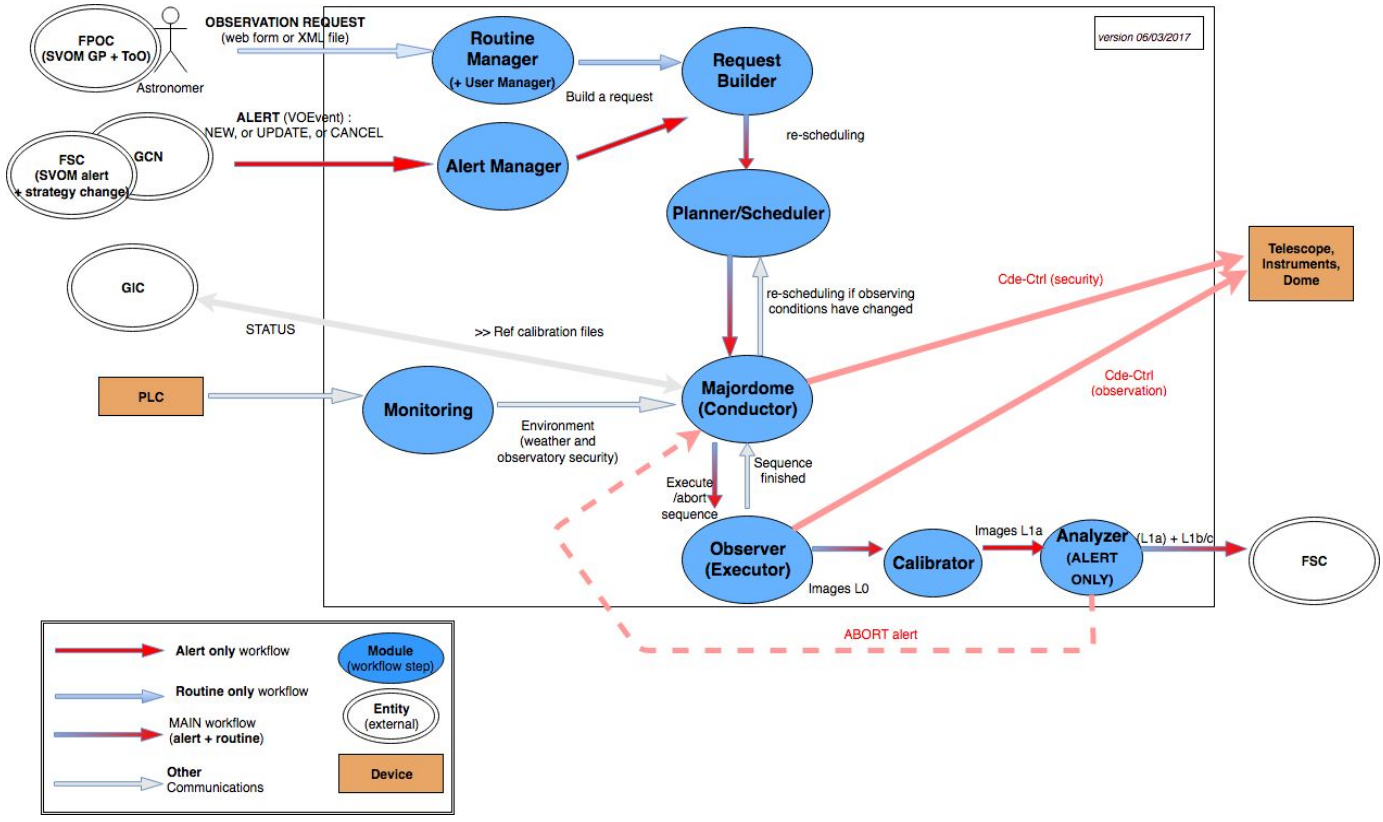
1.1. GCC (GFT Control Center) General Architecture



1.2. Inside GCC

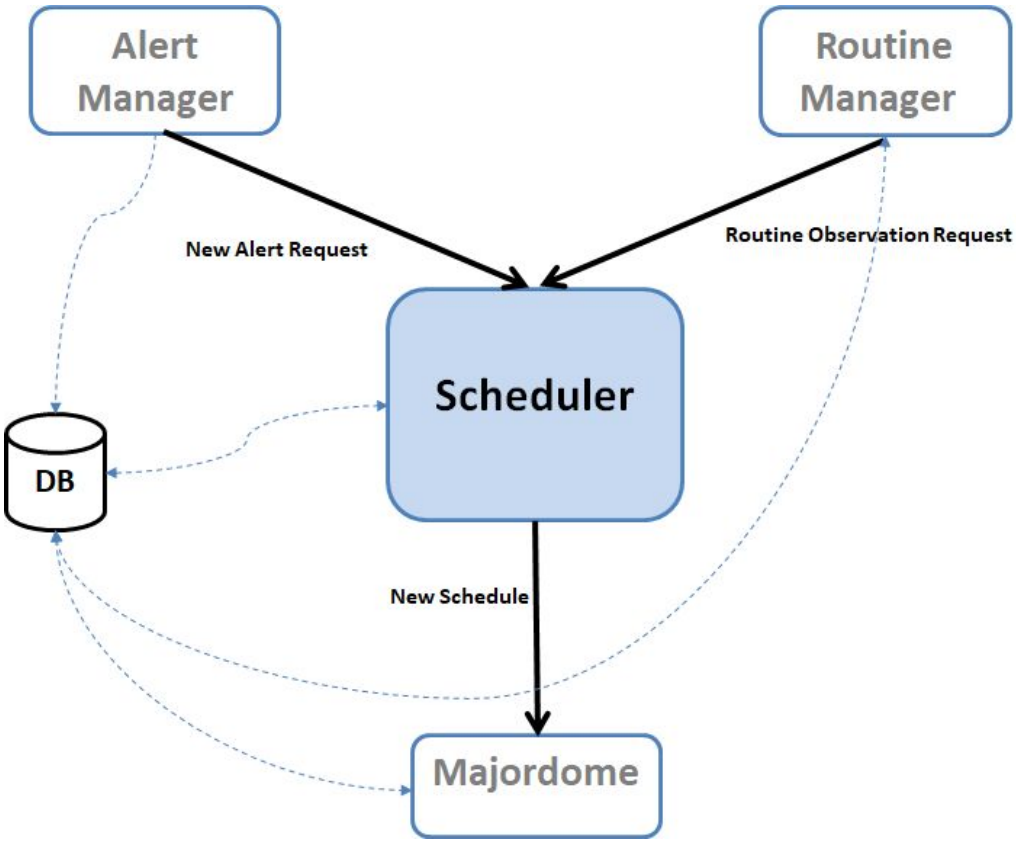


1.3. The PyROS modules



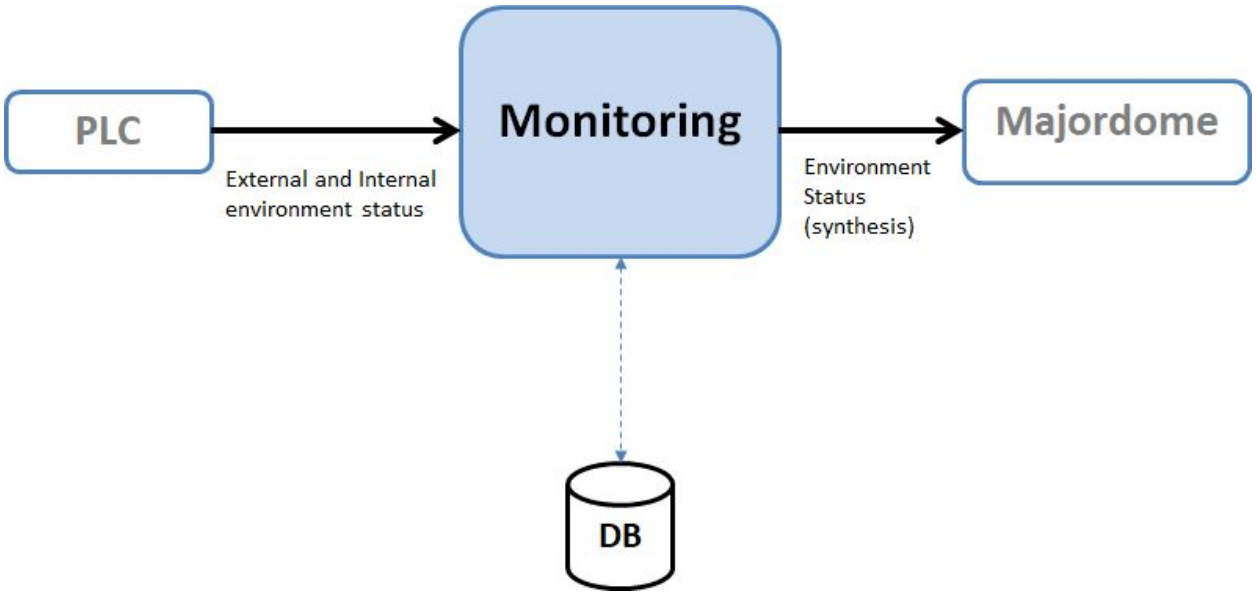
1.3.1. The Scheduler module (SCHED)

The Scheduler module interfaces with other modules (inputs on top)



1.3.2. The Environment monitoring module (ENV)

The Environment Monitor module interfaces with other modules (inputs on the left)



2. Installation

2.1. COMPATIBLE PLATFORMS (TESTED)

This software is targeted first for Linux CentOS 7 (+ Fedora and Ubuntu), but also for Mac OS X and Windows.
All these systems should run Python 3 (3.5+)

Pyros has been tested on these platforms:

- **Linux** :
  - **CentOS 7.1** (with Python 3.4)
  - Linux Mint 17.2 (== Ubuntu 14.04.3) (with Python 3.5)
  - Ubuntu 16.04 (with python 3.5.2)
- **Mac OS** 10.13 (with Python 3.6)
- **Windows** 10 (with Python 3.5)

2.2. THE GITLAB REPOSITORY

- URL : https://gitlab.irap.omp.eu/epallier/pyros
  (see Activity and Readme file)

- Browse source code (dev branch) : https://gitlab.irap.omp.eu/epallier/pyros/tree/dev

- Last commits : https://gitlab.irap.omp.eu/epallier/pyros/commits/dev

- Graphical view of commits : https://gitlab.irap.omp.eu/epallier/pyros/network/dev

2.3. GET THE PYROS SOFTWARE

2.3.1. Authenticate to the gitlab

In order to get this software, you must first authenticate on the IRAP gitlab
https://gitlab.irap.omp.eu/epallier/pyros

For this, just go to https://gitlab.irap.omp.eu/epallier/pyros
and either sign in with your LDAP account (if you are from IRAP),
or register via the "Sign up" form.

2.3.2. Get the software

2.3.2.1. DYNAMIC VERSION (Developers) : Get a dynamic version (synchronized)

If you do not want to contribute to this project but just want to try it, you can just download a STATIC version of it : go to next section "STATIC VERSION" below.

Windows users : you first need to get the GIT software (see below, "For Windows users")

By getting the software from git, you will get a dynamically synchronized version,
which means that you will be able to update your version as soon as a new version is available
(simply with the command : "git pull").

(From Eclipse : See below, section "NOTES FOR ECLIPSE USERS")

From the terminal :

```
$ git clone https://gitlab.irap.omp.eu/epallier/pyros.git PYROS
```

(or also, but not sure it works well : git clone git@gitlab.irap.omp.eu:epallier/pyros.git PYROS)

If you ever get this error message :

```
fatal: unable to access 'https://gitlab.irap.omp.eu/epallier/pyros.git/':
Peer's certificate issuer has been marked as not trusted by the user.
```

Then, type this command (and then run again the git clone command):

```
$ git config --global http.sslVerify false
```

(Also, the first time you get the project, it will ask you for a login and password)

This creates a PYROS folder containing the project (with a .git/ subfolder for synchronization with the git repository)

Go into this directory :

```
$ cd PYROS
```

By default, you are on the "master" branch :

```
$ git branch
*  master
```

You should NEVER do any modification directly on this branch, so instead **jump to the "dev" branch** :

```
$ git checkout dev
$ git branch
* dev
  master
```

2.3.2.2. STATIC VERSION (Non developers) : Download a static version (not synchronized) :

Go to https://gitlab.irap.omp.eu/epallier/pyros/tree/master

Click on "Download zip" on the up right hand corner.
Double-click on it to unzip it.
You should get a "pyros.git" folder.
In this documentation, this software folder will be referenced as "PYROS".
(you can rename "pyros.git" as "PYROS" if you want : "mv pyros.git PYROS")

2.3.3. For WINDOWS users

- Download git at https://git-scm.com/download/win
- Run setup (keep default configurations)
- Once installed, open cmd :

```
$ git config --global http.sslVerify false
```

You can now use your git from the cmd or the graphic client !

2.4. PROJECT STRUCTURE

- src/ : conteneur du projet (le nom est sans importance)
  - manage.py : utilitaire en ligne de commande permettant differentes actions sur le projet
  - pyros/ : the actual Python package of the project
    - settings.py : project settings and configuration
    - urls.py : déclaration des URLs du projet
    - wsgi.py : point d'entrée pour déployer le projet avec WSGI

- database/ : database configuration and documentation

- doc/ : project documentation

- install/ : project installation howto

- private/ : the content of this folder is private and thus not commited to git ; it should contain your Python3 virtual environment

- simulators/ : the devices simulators

- public/ : this folder contains all public files like the web html files
  - static/

Each **APP**(lication) structure :
https://projects.irap.omp.eu/projects/pyros/wiki/Project_structure#Applications-architecture

2.5. INSTALLATION OF PREREQUISITES

Pyros needs some prerequisites :

- Python 3.5+ (3.6 recommended)
- RabbitMQ
- Mysql Database server (last version recommended)

2.5.1. Prerequisite 1 : Install Python3 (3.5+) + pip + lxml

- **Linux CentOS 7.1 (main target)**

(python35 not yet available as rpm ?)

$ sudo yum update yum
$ sudo yum update kernel
$ sudo yum update
$ sudo yum update
$ sudo yum install yum-utils
$ sudo yum groupinstall development
$ sudo yum install https://centos7.iuscommunity.org/ius-release.rpm
$ sudo yum install python34

$ python3.4 -V
Python 3.4.3

$ sudo yum install python34-devel
(needed for python package mysqlclient)

((
NO MORE NECESSARY:
$ sudo yum update python-setuptools
$ easy_install --version
setuptools 0.9.8
$ sudo easy_install pip
$ pip --version
pip 8.1.1 from /usr/lib/python2.7/site-packages/pip-8.1.1-py2.7.egg (python 2.7)

$ sudo pip install --upgrade pip

Necessary for "lxml" python package:
$ sudo yum install libxml2 libxml2-devel
$ sudo yum install libxslt libxslt-devel

- **Linux Ubuntu** :

$ sudo add-apt-repository ppa:fkrull/deadsnakes
$ sudo apt-get update
$ sudo apt-get install python3.5
$ sudo apt-get install python3.5-dev
(needed for python package mysqlclient && lxml)
$ sudo apt-get install libxml2-dev
$ sudo apt-get install libxslt-dev
$ sudo apt-get install zlib1g-dev can be required too
$ sudo apt-get install python-pip
$ sudo apt-get install python-lxml

((
NO MORE NECESSARY
$ sudo pip install --upgrade virtualenv
))

- **Mac OS X** :
    - **From Brew (recommended)**

```
Python d'origine sur Mac = Python2 :
$ which python
/usr/bin/python

Install HomeBrew :
https://brew.sh/index_fr.html

Install Python3 :
$ brew doctor
$ brew update
$ br
ew upgrade
$ brew install python3
$ brew info python3
```

```
$ python3 -V
Python 3.6.4
$ which python3
/usr/local/bin/python3
```

- **From MacPort**

Install macport :
https://www.macports.org/install.php

Install the "port" python36

```
$ sudo port install python36
$ sudo port select --set python3 python36
$ sudo port install py36-readline
$ sudo port install py36-pip
$ port select --set pip pip36
```

- **Windows** (tested with Win10 only) :

Go to https://www.python.org/downloads/windows/ , choose the wanted version
On the wanted version's page, download Windows x86 executable installer

Run the executable :
* On the first page, check "Add python3.5 to PATH"
* Choose "Install now" option

Open cmd (windows + R, cmd) :
$ py -m pip install --upgrade pip

2.5.2. Prerequisites 2 and 3 : MySQL and RabbitMQ

The **install.py** script deals with these 2 prerequisites but **only for Linux Ubuntu and Centos (NOT FOR WINDOWS OR MAC)**. Thus, **if you are using ubuntu or centos**, launch this from the install directory:

```
$ cd install
$ sudo python3 install.py --prerequisites
```

(TODO: ajouter "systemctl enable rabbitmq…")

If you have executed this above (only for Linux Ubuntu and CentOS) go straight to section INSTALLATION OF NEEDED PYTHON PACKAGES

Otherwise, go on reading.

2.5.2.1. Prerequisite 2 : Install a DataBase Management Server (DBMS)

If the MySql database server is already installed on your computer, skip this section

For more information, see section "Notes about Mysql"

- **Linux CentOS (target platform)**

cf https://www.howtoforge.com/apache_php_mysql_on_centos_7_lamp#-installing-mysql-

First, update your system:
$ sudo yum update yum
$ sudo yum update kernel
$ sudo yum update

$ sudo yum install mariadb-server
$ sudo yum install mariadb

$ sudo yum install mariadb-devel
(needed for python package mysqlclient)

$ sudo systemctl start mariadb.service

$ sudo systemctl enable mariadb.service

=> Created symlink from /etc/systemd/system/multi-user.target.wants/mariadb.service to /usr/lib/systemd/system/mariadb.service.

$ sudo mysql_secure_installation

- **Linux Ubuntu**

First, update your system:
$ sudo apt-get update

$ sudo apt-get install mysql-server
$ sudo apt-get install mysql-client

$ sudo apt-get install libmysqlclient-dev
(needed for python package mysqlclient)

- **Mac OS X**

Install MySql with brew (recommended) or macport, or install XAMPP (https://www.apachefriends.org/fr/index.html)

    - With brew (recommended) :

Tested with Mysql 5.7.21

```
$ brew doctor
$ brew update
$ brew upgrade
$ brew install mysql
$ mysql -V
```

Now, start the Mysql server :

```
$ mysql.server start
```

Now, connect to the Mysql server with the mysql client :

```
$ mysql -u root
mysql> exit
```

- **Windows** (tested with Windows 10)

Download and install the newest version on https://dev.mysql.com/downloads/installer/

Once installed, launch MySQL Installer.
Click on 'Add...' on the right.
In MySQLServers section, choose the newest, then click on NEXT.
Install and configure the server (just follow the installation guide).

Then launch mysql (via the Windows menu).

2.5.2.2. Prerequisite 3 : Install RabbitMQ

RabbitMQ is a message queue server used by Celery to handle tasks queues.
It uses the amqp protocol to manage queue messages.

- **CentOS** :

$ sudo yum install rabbitmq-server

Installation :

rabbitmq-server	noarch	3.3.5-17.el7

Installation pour dépendances :

erlang-asn1	x86_64	R16B-03.16.el7

Get status:
(CentOS7) $ sudo rabbitmqctl status
(older CentOS) $ sudo /sbin/service rabbitmq-server status

Stop:
(CentOS7) $ sudo systemctl stop rabbitmq-server
(older CentOS) $ sudo /sbin/service rabbitmq-server stop

Start:
(CentOS7) $ sudo systemctl start rabbitmq-server
(older CentOS) $ sudo /sbin/service rabbitmq-server start

- **Ubuntu**

Tested with RabbitMQ 3.5.7
(the server is automatically started)

$ sudo apt-get install rabbitmq-server

Get status:
$ sudo invoke-rc.d rabbitmq-server status

Stop:
$ sudo invoke-rc.d rabbitmq-server stop

Start:

$ sudo invoke-rc.d rabbitmq-server start

- **MacOS** :
    - With brew (recommended) :

Tested with RabbitMQ 3.7.2

(for more details, see https://www.rabbitmq.com/install-homebrew.html)

```
$ brew doctor
$ brew update
$ brew upgrade
$ brew install rabbitmq

RabbitMQ is now installed under /usr/local/sbin

Add
  PATH=/usr/local/sbin:$PATH
to your ~/.bash_profile or ~/.profile.

The server can then be started with :
$ rabbitmq-server &
(All scripts run under your own user account. Sudo is not required)

Get status:
$ rabbitmqctl status

To stop rabbitmq :
$ rabbitmqctl stop

The following command
$ launchctl limit
can be used to display effective limits for the current user
```

    - With MacPort:

```
$ sudo port install rabbitmq-server
--->  Installing erlang @18.2.1_1+hipe+ssl
```

```
...
--->  Installing rabbitmq-server @3.5.7_0
--->  Activating rabbitmq-server @3.5.7_0
...

To start rabbitmq :
$ sudo rabbitmq-server

Get status:
$ sudo rabbitmqctl status

To stop rabbitmq :
$ sudo rabbitmqctl stop
```

- **Windows** :

Take the wanted Erlang version at http://www.erlang.org/downloads and install it (required)

Take the wanted RabbitMQ version at https://www.rabbitmq.com/install-windows.html and install it. Then the server will run automatically

2.6. INSTALLATION OF NEEDED PYTHON PACKAGES

2.6.1. Install all the needed python packages and the PyROS database

The **install.py** script will install the needed packages and create the pyros database for you. Just go into the PYROS/install/ folder and **Run the install.py without sudo privileges:**

```
$ cd install
$ python3 install.py
```

Linux and Mac : it is VERY IMPORTANT that you type "python3" and not "python"
Windows : replace "python3" with "py"

If everything went well, you can go straight to section TEST

NB: *you might need to drop your pyros database (and also pyros_test if ever it exists) before running the install script (if migrations are too big)*

If something goes wrong, install manually each package (see section "MANUAL INSTALLATION OF PYTHON PACKAGES")

Information for developers only :
older version (with old Jeremy Barneron install.py script) : python3 install.py install
TODO: update "create user if exists" => does not work with mysql 5.6 (only with 5.7)

2.6.2. (OPTIONAL) Install the Comet python package

Comet is not needed yet, install it only if you want to work on the ALERT management part of the project. For now, do not bother with it, and go straight to next section.

Latest info on this package : http://comet.transientskp.org/en/stable/

Comet is needed as a broker to receive and send VOEvents (https://github.com/jdswinbank/Comet/tree/py3)
You MUST have your virtualenv activated (source venv_py3_pyros/bin/activate in your 'private/' directory)

Documentation is available here : http://comet.readthedocs.io/en/stable/installation.html
(see also http://voevent.readthedocs.io/en/latest/setup.html)

1) Essayer d'abord la méthode automatique (avec pip) :

$ source private/venv_py3_pyros/bin/activate
$ pip install comet

2) Si ça ne marche pas, essayer la méthode manuelle (download puis install) :

- Ubuntu :

# You can do this anywhere on your computer
$ git clone https://github.com/jdswinbank/Comet.git
$ cd Comet
$ (sudo ?) python setup.py install
$ sudo apt-get install python-lxml

- MacOS :

Idem Ubuntu

- Windows :

TODO:

3) Test Comet

$ twistd comet --help
$ trial comet

All tests should pass

2.7. TEST

Please run the tests suite, just to be sure that the software is well installed.
(Tests are classes declared in all django apps test.py file. The test classes inherit from django.test.TestCase)

First, be sure that all the pre-requisites are well installed and running (started) :

- MySQL : see Install-a-database-server
- RabbitMQ : see Install-RabbitMQ

Before launching the tests, activate your virtual environment :

```
$ cd PYROS/
$ source private/venv_py3_pyros/bin/activate
(Windows) $ private\venv_py3_pyros\Scripts\activate
```

Windows : below, always replace "python" with "py"

Be sure that at least all unit tests pass:

```
$ python pyros.py unittest
```

(***If ever the tests don't pass*** *because of mysql try* : `$ python pyros.py updatedb`)

If unit tests pass, then try this :

```
$ python pyros.py test_all
```

(for now same tests that unittest)

If test_all passes, then run ALL tests:

```
$ python pyros.py test
```

(for now same that unittest)

Now, **test with simulators** :

```
$ python pyros.py simulator_development
```

(Ctrl-c to stop)
*(**If ever this test does not pass** try to create manually yourself the "pyros_test" database before, with the mysql client : "create database pyros_test")*
While this is running, go to **http://127.0.0.1:8000** in your web browser. Log in with login 'pyros' (in the Email field) and password 'DjangoPyros' to to see what's happening (click on Schedule,

on System, on Routines and then click on a request to see its detail)

Custom commands (for dev only) *:*

$ cd src/

$ [./manage.py] test app.tests # Run tests for the application 'app'
Ex:
$ ./manage.py test scheduler.tests
$ ./manage.py test monitoring.tests
$ ./manage.py test routine_manager.tests
$ ./manage.py test alert_manager.tests
$ ./manage.py test common.tests
$ ./manage.py test majordome.tests
$ ./manage.py test user_manager.tests

$ [./manage.py] test app.tests.ModelTests # Run test methods declared in the class app.tests.ModelTests
$ [./manage.py] test app.tests.ModelTests.test_method # Only run the method test_method declared in app.tests.ModelTests

2.8. RUN

First, be sure that all the prerequisites are well installed and running :

- MySQL : see Install-a-database-server
- RabbitMQ : see Install-RabbitMQ

First, **if not already done,** activate the virtual environment:

```
$ cd PYROS
$ source private/venv_py3_pyros/bin/activate
(Windows) $ private\venv_py3_pyros\Scripts\activate
```

Then, **start the web server**

```
$ cd src
$ python manage.py runserver
Starting development server at http://127.0.0.1:8000/
(keep it running...)
```

General syntax is :
$ python manage.py runserver IP:PORT
Example: $ python manage.py runserver 127.0.0.1:8001
(obsolète: To check that this service is actually running, type "$ netstat -an |grep 8000" and you should get "tcp 0 0 127.0.0.1:8000 0.0.0.0: LISTEN")*

2.8.1. Access the PyROS (normal) application

Go to "http://localhost:8000" in your browser
Login as 'pyros' with the password 'DjangoPyros'
You can click on the different sections on the left (Schedule, System, Alerts …).

⇒ As you can notice, those sections are all empty !!!
Of course, because there is no activity at all : no alert coming, no observation request submitted by users, no running observation…
If you want to see something, you need to take some actions yourself on PyROS. For instance, you could create a new Routine Request and submit it so that it will be scheduled and executed…

That's why it is interesting to use **simulators**. They are a placeholder for the real hardware devices (Telescope, Cameras, PLC), and they will be used when executing an observation request. But this is not enough !

We need some **events** coming like a **GRB alert**, an **observation request submitted** by a user, a **weather alarm** (rain, clouds, wind…), a **site alarm** (human intrusion…), or even a **hardware failure** (visible camera is no more responding...).

2.8.2. Access the PyROS administration interface

Go to "http://localhost:8000/admin" in your browser
Login as 'pyros' with the password 'DjangoPyros'

From this interface, you can see all the pyros database tables and you can add content to them or do some modifications...

2.8.3. Other use case (To be continued...)

While the web server is running on a terminal,
Open a NEW TERMINAL WINDOW from which you will start the pyros software (also inside a virtual environment) :

```
$ python pyros.py start
```

(Ctrl-c to stop)

Now, go to "http://localhost:8000" in your browser
Login as 'pyros' with the password 'DjangoPyros'

2.8.4. Play with PyROS with the Django shell

First activate the pyros venv (if not already done):

```
$ cd PYROS
$ source private/venv_py3_pyros/bin/activate
```

Go into the pyros project folder src/ and launch the django shell :

```
$ cd src/
./manage.py shell
```

```
(InteractiveConsole)

>>> import django
>>> from common.models import *
```

Play with the PyROS objects (entities) : **Countries**

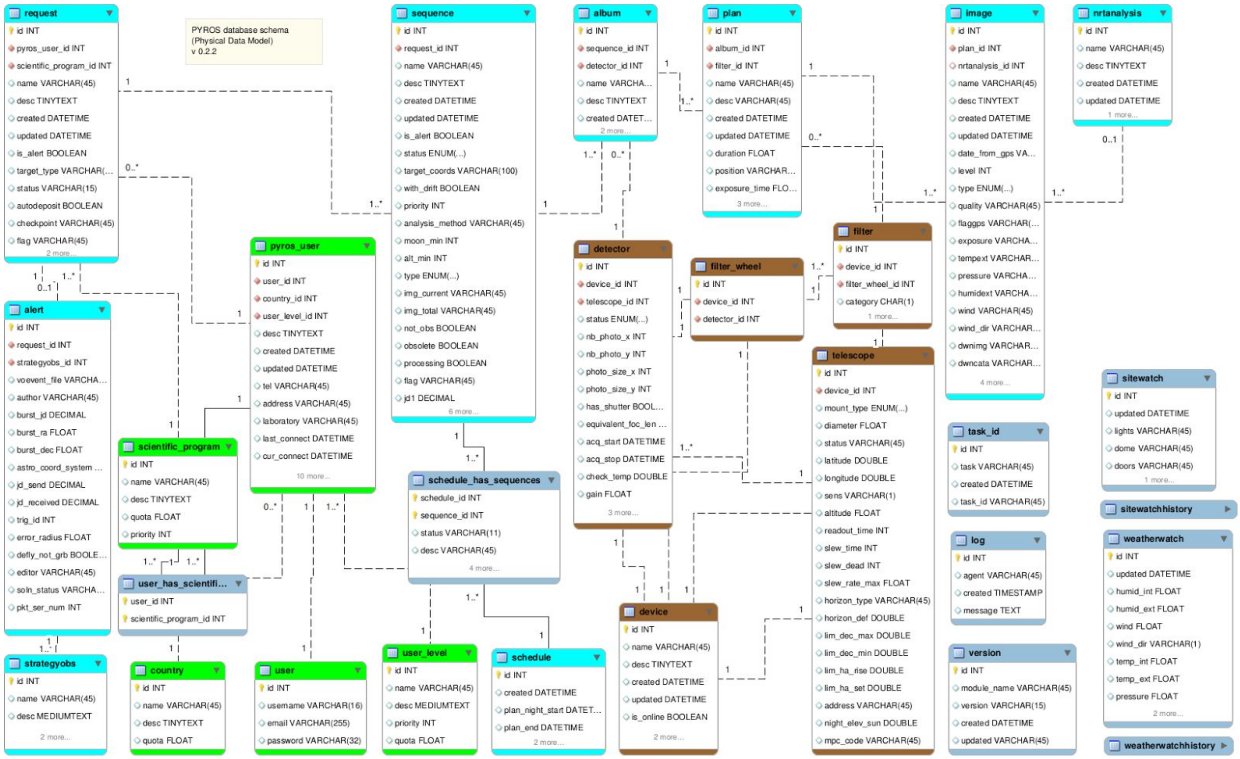
```
>>> country = Country(name='mexico', quota=1)
>>> country.save()
(ajout si pas d'id, modif si id)

>>> country = Country(name='france')
>>> country.save()
>>> country.pk
>>> 2

>>> countries = Country.objects.all()
>>> countries
<QuerySet [<Country: France>, <Country: mexico>, <Country: france>]>
>>> countries.count
>>> <bound method QuerySet.count of <Country: mexico>, <Country: france>>
>>> countries.count()
>>> 2
>>> print(countries)
>>> <Country: mexico>, <Country: france>
>>> print(countries.query)
>>> SELECT country.id, country.name, country.desc, country.quota FROM country

>>> cs = countries.filter(name__icontains='fran')
>>> print(cs)
>>> <Country: france>

>>> cs = countries.filter(name__startswith='me')
>>> print(cs)
>>> <Country: mexico>
```

Play with the PyROS objects (entities) : **Requests and Sequences**

```
# 1) Create a new sequence  (Supposing user1 and sp are already set)

req1 = Request.objects.create (pyros_user = user1,    scientific_program =
sp ) # creating a request

seq1 = Sequence.objects.create ( request=self.req1,
```

```
status=Sequence.TOBEPLANNED,
            name="seq1",
jd1=0,
jd2=2,
priority=4,
t_prefered=1,
duration=1 )

# Get the request that this sequence belongs to :
req = seq1.request

# 2) Update sequence attributes
seq.name = 'new name'
seq.save()

# 3) Delete sequence
seq.delete()

# 4) Fetch sequences according to some criteria
sequences = Sequence.objects.get(target='target')
# or
sequences = Sequence.objects().filter(...)

# 5) Get all plans of the sequence 1st album
album1 = seq.albums[0] # select 1st album
plans = album1.plans
# Display all plans
for plan in plans:
            print('plan', plan)
```

2.9. DATABASE SCHEMA (v0.2.2)



2.10. NOTES FOR ECLIPSE USERS

1) Install Eclipse (if necessary) and the PyDev plugin

Install Eclipse

(optional, can be done later) Install the plug-in PyDev (via install new software, add http://pydev.org/updates)

2) Import the PYROS project

a) If **PYROS is already on your file system** (cloned with git from the terminal, see section above)

Just import your PYROS project from the file system :
File Import / Existing projects into workspace / Next
Select root directory : click on “Browse” and select your PYROS directory
Click on “Finish”

b) If **PYROS is not yet on your file system** (not yet cloned with git)

You must clone the PYROS project with git from Eclipse :
File/Import project from git
Select repository source: Clone URI: https://gitlab.irap.omp.eu/epallier/pyros.git
Directory:
par défaut, il propose : /Users/epallier/git/pyros
mais on peut le mettre ailleurs (c'est ce que j'ai fait)
initial branch: master
remote name: origin
Import as general project
Project name: PYROS
If necessary, to deactivate CA certificate verification
Window -> Preferences -> Team -> git -> configuration -> Add entry
Key = http.sslVerify
Value = false

Si le plugin PyDev n’est pas encore installé, voici un truc simple pour le faire :
Ouvrir un fichier python
Eclipse propose automatiquement d'installer PyDev

Switch to the DEV branch :
Right-clic on project, Team/Switch to/dev

Optional :
Install the django template editor (via install new software, add http://eclipse.kacprzak.org/updates)

3) Configure the project

The project is created.
Now, if this has not been automatically done by Eclipse, you have to set the project as a «PyDev » and a « Django » project.
clic droit sur le projet / PyDev / set as a PyDev project
clic droit sur le projet / PyDev / set as a Django project

Clic droit sur le projet : on doit maintenant avoir un sous-menu Django
Clic droit sur le dossier src : PyDev / set as source folder (add to PYTHONPATH)
Do the same for the folder “simulators”

clic droit sur le dossier du projet : Properties / Pydev-Django :
- **Django manage.py : src/manage.py**
- **Django settings module : pyros.settings**

4) Set the python interpreter

Now, once the Python3 virtual environment is created (see above),
set it in Eclipse as the project interpreter:
Right clic on the project : Properties / PyDev - Interpreter/Grammar
Interpreter : click on “click here to configure an interpreter not listed”
Click on « New... » :
- Interpreter name : venv_py3_pyros
- Interpreter executable : click on « Browse »
Select your python virtualenv executable from inside your PYROS project (private/venv_py3_pyros/bin/python)
Click “Open”
Click OK
A new window “Selection needed” opens
Unselect only the last line with “site-packages”.
Click OK

Interpreter : **click again on** “click here to configure an interpreter not listed” !!!!!!!
Select the interpreter you just created and which is named “venv_py3_pyros”

Click on the tab "Libraries"
Click on 'New folder', then select your virtualenv's lib/python3.5/site-packages folder
OK
Click on “Apply and Close”
Interpreter: select now venv_py35_pyros from the list
Click on “Apply and Close”

5) (Optional) Set Code style

Eclipse/Preferences : Pydev / Editor
- Auto Imports : uncheck « Do auto import »
- Code style:
- Locals … : underscore
- Methods : underscore
- Code style / Code Formatter: activer « use autopep8.py for code formatting »
- Tabs : Tab length : 4
...

6) Test

- Right-clic on the project / Django /
    - Run Django tests
      (click on the Console tab to see what’s going on)
    - Custom command…
    - Shell with django environment...

7) Run

Right clic on project -> Django/Custom command/runserver

Now, check http://localhost:8000/

2.11. NOTES FOR PYCHARM USERS

1) Install Pycharm

2) import pyros project

3) Mark the src directory and simulators directory as source root directories

4) Go in file -> settings (CTRL + ALT + S) -> Project : Pyros -> Project Interpreter
Add an interpreter which is the one from your virtual environment : Add Local -> find the python 3 binary in your virtualenv

5)
For professional version :
Go in Language & Frameworks -> Django and set the django project root / Settings (pyros/settings.py) / Manage script

For community edition :
First: Go to edit configuration (top right corner)
Second: Click on the (+) mark in top-left corner and add python configuration.
Third: Click on the Script, and for django select the manage.py which resides on the project directory.
Fourth: Add <your command> as Scripts parameter and click apply : you normally should be able to run your project

2.12. Notes about MySql (TBC)

Not sure this is still working… (to be tested)

By default, Pyros uses Mysql, but this implies that you have to install the Mysql database server...

Thus, to make things easier, avoid Mysql installation by using Sqlite instead as the database server (which will need no installation at all) :

=> **For this, just edit the file PYROS/src/pyros/settings.py and set MYSQL variable to False, and that's it. You can go to next section**

Now, if you really want to use Mysql (which is the default), you will need to install it (only if not already installed), so keep reading.

(Skip this if you are using Sqlite instead of MySql)

2.13. MANUAL INSTALLATION OF PYTHON PACKAGES ONE BY ONE (obsolete)

Follow these steps only if the previous guided and nearly automatic installation did not work for you

Mind that this section is OUTDATED (obsolete) and some contents might not be relevant to your real issues.

2.13.1. (Only if using Mysql) Create the database "pyros" and the pyros user

Only if you are using Mysql, you need to create an empty database "pyros"
(which will be filled automatically by django)
$ mysql -u root -p
(enter your root password)

$ mysql> create database if not exists pyros;

The user creation depends on your MySQL version :

- 5.7 and above :
- $ mysql> DROP USER IF EXISTS pyros;
  $ mysql> CREATE USER 'pyros' IDENTIFIED BY 'DjangoPyros';
  $ mysql> GRANT ALL PRIVILEGES ON pyros.* TO pyros;

- under 5.7 :
- $ mysql> GRANT USAGE ON *.* TO 'pyros';
  $ mysql> DROP USER 'pyros';
  $ mysql> CREATE USER 'pyros' IDENTIFIED BY 'DjangoPyros';
  $ mysql> GRANT ALL PRIVILEGES ON pyros.* TO pyros;

If none of these solution work, check on the internet to create a user named pyros with the password DjangoPyros.

2.13.2. Create a Python3 virtual environment dedicated to the project

$ mkdir private/

$ cd private/

$ which python3.5 ("where python" for windows)
/opt/local/bin/python3.5

$ python3 -m venv_py35_pyros -p /opt/local/bin/python3.5 ou py instead of python3 on windows
=> creates a venv_py35_pyros/ folder inside PYROS/private/

2.13.3. Activate the python virtual environment (from inside the project)

$ pwd
.../PYROS/private

$ source ./venv_py35_pyros/bin/activate (venv_py35_pyros/Scripts/activate on Windows)

2.13.4. Install needed python packages

Check that the virtual environment is activated
$ python -V
Python 3...

$ which pip
.../PYROS/venv_py35_pyros/bin/pip

Upgrade pip to last version available:
$ pip install --upgrade pip
Collecting pip

```
  Downloading pip-8.1.1-py2.py3-none-any.whl (1.2MB)
Installing collected packages: pip
  Found existing installation: pip 7.1.2
    Uninstalling pip-7.1.2:
      Successfully uninstalled pip-7.1.2
Successfully installed pip-8.1.1

Upgrade wheel to last version available:
$ pip install --upgrade wheel
Collecting wheel
  Downloading wheel-0.29.0-py2.py3-none-any.whl (66kB)
Installing collected packages: wheel
  Found existing installation: wheel 0.24.0
    Uninstalling wheel-0.24.0:
      Successfully uninstalled wheel-0.24.0
Successfully installed wheel-0.29.0
```

Go into the install/ folder:
$ cd .../PYROS/install/

Install all the needed python packages at once:
$ pip install -r REQUIREMENTS.txt

If something goes wrong, install them one by one:

- **Install Django** :
- $ pip install django
  Collecting django
    Downloading Django-1.9.4-py2.py3-none-any.whl (6.6MB)
  Installing collected packages: django
  Successfully installed django-1.9.4

  $ pip install django-admin-tools
  Collecting django-admin-tools
    Downloading django_admin_tools-0.7.2-py2.py3-none-any.whl (289kB)
  Installing collected packages: django-admin-tools
  Successfully installed django-admin-tools-0.7.2

  $ pip install django-debug-toolbar

```
Collecting django-debug-toolbar
  Downloading django_debug_toolbar-1.4-py2.py3-none-any.whl (212kB)
Requirement already satisfied (use --upgrade to upgrade): Django>=1.7 in
./venv_py35_pyros/lib/python3.5/site-packages (from django-debug-toolbar)
Collecting sqlparse (from django-debug-toolbar)
  Downloading sqlparse-0.1.19.tar.gz (58kB)
Building wheels for collected packages: sqlparse
  Running setup.py bdist_wheel for sqlparse ... done
  Stored in directory:
/Users/epallier/Library/Caches/pip/wheels/7b/d4/72/6011bb100dd5fc213164e4bbee13d4
e03261dd54ce6a5de6b8
Successfully built sqlparse
Installing collected packages: sqlparse, django-debug-toolbar
Successfully installed django-debug-toolbar-1.4 sqlparse-0.1.19

$ pip install django-extensions
Collecting django-extensions
  Downloading django_extensions-1.6.1-py2.py3-none-any.whl (202kB)
Collecting six>=1.2 (from django-extensions)
  Downloading six-1.10.0-py2.py3-none-any.whl
Installing collected packages: six, django-extensions
Successfully installed django-extensions-1.6.1 six-1.10.0

$ pip install django-suit
Collecting django-suit
  Downloading django-suit-0.2.18.tar.gz (587kB)
Building wheels for collected packages: django-suit
  Running setup.py bdist_wheel for django-suit ... done
  Stored in directory:
/Users/epallier/Library/Caches/pip/wheels/12/8b/9a/e02ab0ad9229881638aa040d47d77
c8f562999533811927d41
Successfully built django-suit
Installing collected packages: django-suit
Successfully installed django-suit-0.2.18
```

- **Install the django boostrap css package** :
- $ pip install django-bootstrap3
-
- (==> 'bootstrap3' is then to be added as an application in settings.py -> INSTALLED_APPS)

- **Install the web application server gunicorn (will be used in production instead of the dev django web server)** :
- $ pip install gunicorn
  Collecting gunicorn
    Downloading gunicorn-19.4.5-py2.py3-none-any.whl (112kB)
  Installing collected packages: gunicorn
  Successfully installed gunicorn-19.4.5

- **Install the python mysql client** (not needed if you want to use sqlite):
- $ pip install mysqlclient
  ...

-
    - => If issue under Mac OS X:
    - $ pip install mysqlclient
      Collecting mysqlclient
        Downloading mysqlclient-1.3.7.tar.gz (79kB)
      Building wheels for collected packages: mysqlclient
        Running setup.py bdist_wheel for mysqlclient ... error
      …

        Failed building wheel for mysqlclient
        Running setup.py clean for mysqlclient
      Failed to build mysqlclient
      Installing collected packages: mysqlclient
        Running setup.py install for mysqlclient ... done
      Successfully installed mysqlclient-1.3.7

      BOUH !!!

      => Need to upgrade wheel:

      $ pip install --upgrade wheel
      Collecting wheel
        Downloading wheel-0.29.0-py2.py3-none-any.whl (66kB)
      Installing collected packages: wheel
        Found existing installation: wheel 0.24.0
          Uninstalling wheel-0.24.0:
            Successfully uninstalled wheel-0.24.0
      Successfully installed wheel-0.29.0

YES !!!

Only if necessary, you can reinstall mysqlclient:
$ pip uninstall mysqlclient
$ pip install mysqlclient
Collecting mysqlclient
  Using cached mysqlclient-1.3.7.tar.gz
Building wheels for collected packages: mysqlclient
  Running setup.py bdist_wheel for mysqlclient ... done
  Stored in directory:
/Users/epallier/Library/Caches/pip/wheels/9b/06/50/d11418c26cf8f2156b13d4363b5afde8e7e75ebb8540d0228d
Successfully built mysqlclient
Installing collected packages: mysqlclient
Successfully installed mysqlclient-1.3.7

-
    - => If issue under Windows
    - Same message as the issue for Mac.

      => Need to install wheel manually :

      Go to http://www.lfd.uci.edu/~gohlke/pythonlibs/#mysqlclient to download the newest mysqlclient wheel

      $ pip install path\to\mysqlclient\wheel

      (No need to redo "pip install mysqlclient")

- **Install the julian day converter** :
- $ pip install jdcal

- **Install Celery and dependencies** :
- $ pip install celery
  $ pip install django-celery
  $ pip install Twisted==16.0.0

- **Install django test without migrations (compulsory to use the prod DB for tests)** :

- $ pip install django-test-without-migrations==0.4

- **Install voevent parser** :
- $ pip install voevent-parse==0.9.5

- **Install other dependencies (useful ? TBC)** :
- $ pip install amqplib==1.0.2
  $ pip install pluggy==0.3.1
  $ pip install py==1.4.31