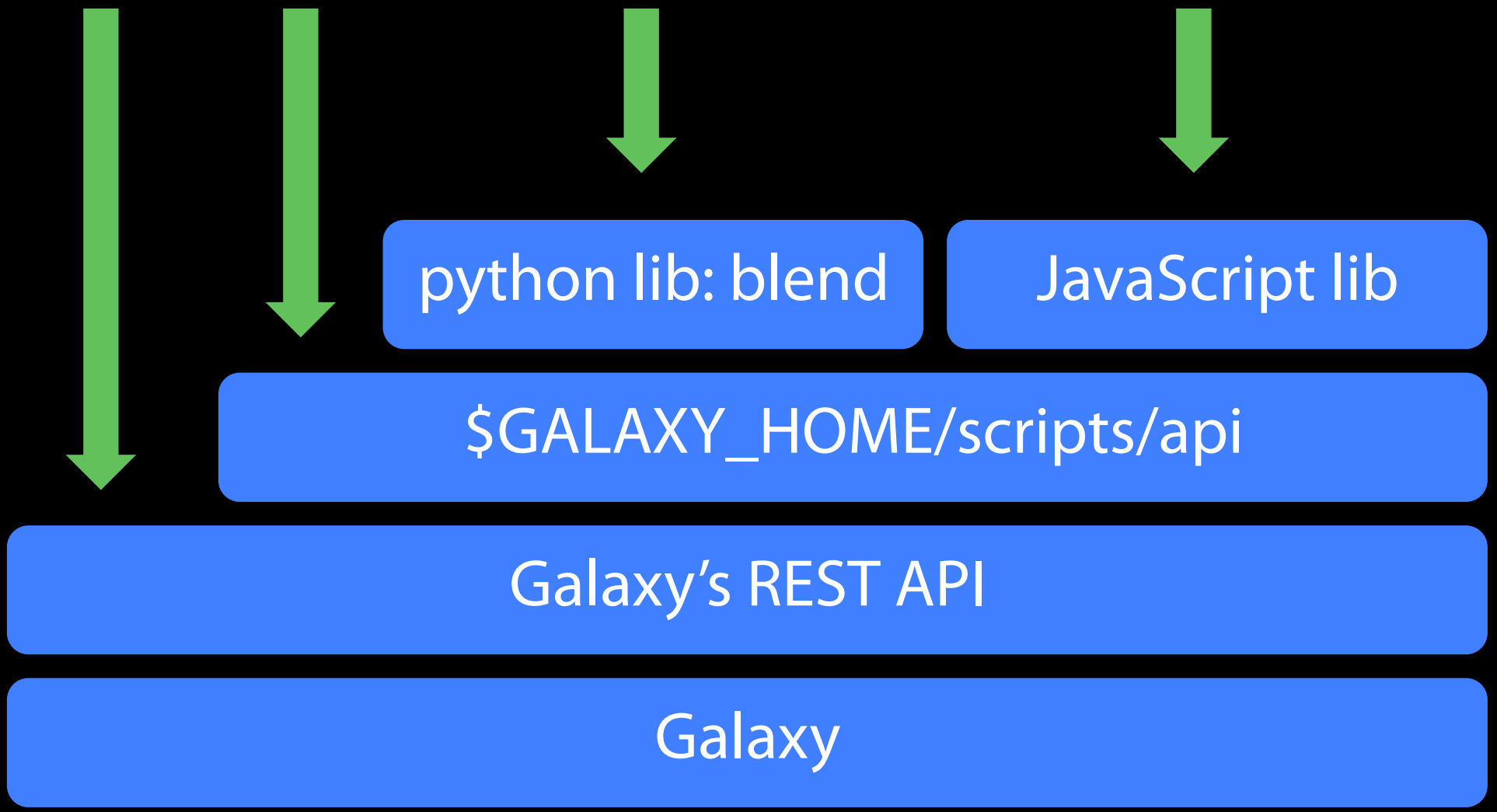
Galaxy API

Galaxy's REST Overview

- Uses generated API keys for per-user authentication
  - No username/password
  - No credential caching, yet (so not really REST)
- Request parameters and responses are in JSON (JavaScript Object Notation)
- Maintains security
- Enable with *enable_api* = *True* in config (enabled by default)

API Interactions with Galaxy



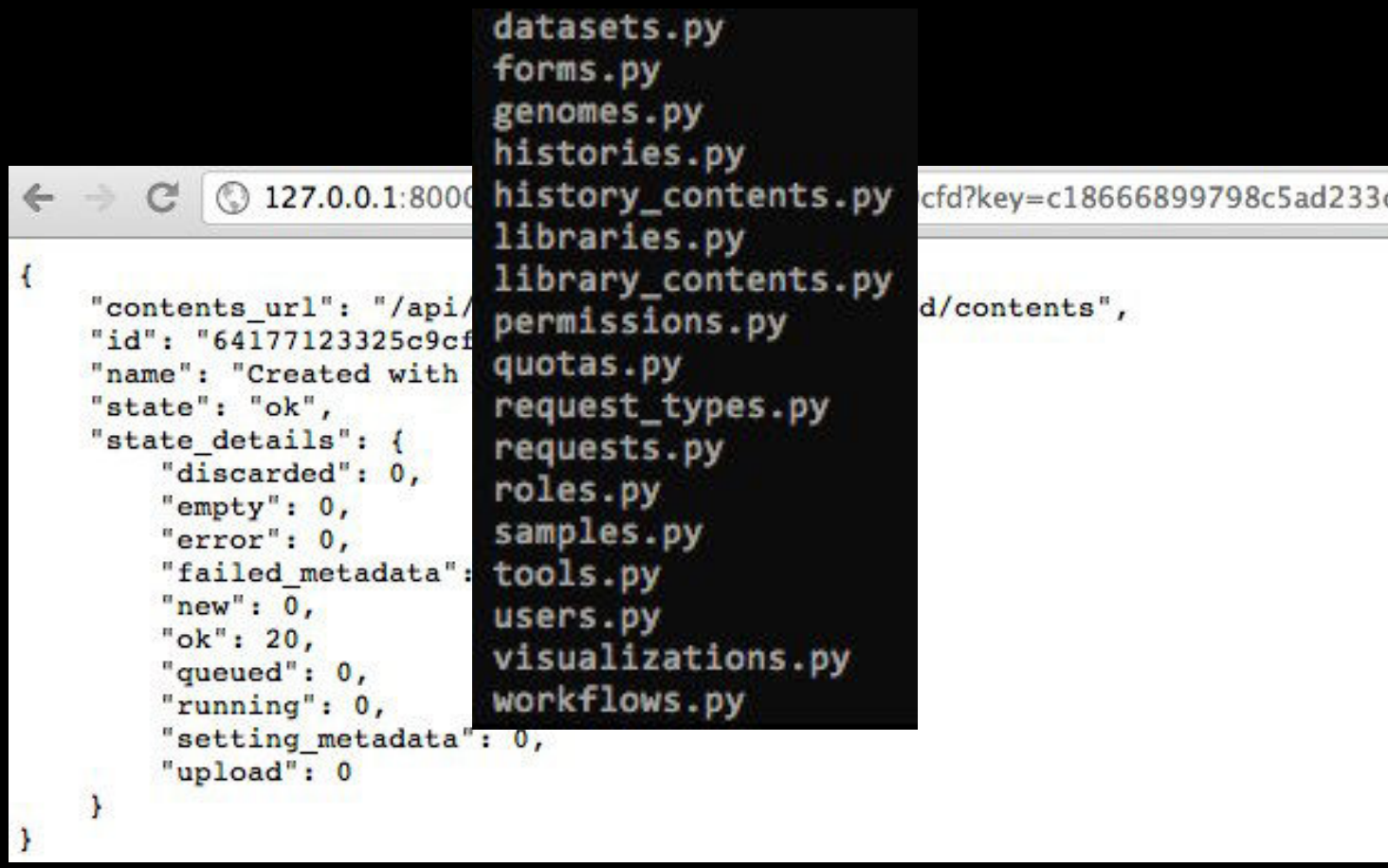
Bare Bones Galaxy API

> create (POST)

> display (GET)

> update (PUT)

> delete (DELETE)



Making the Calls

Wrapper methods exist (in /scripts/api/) to make the API calls easier:

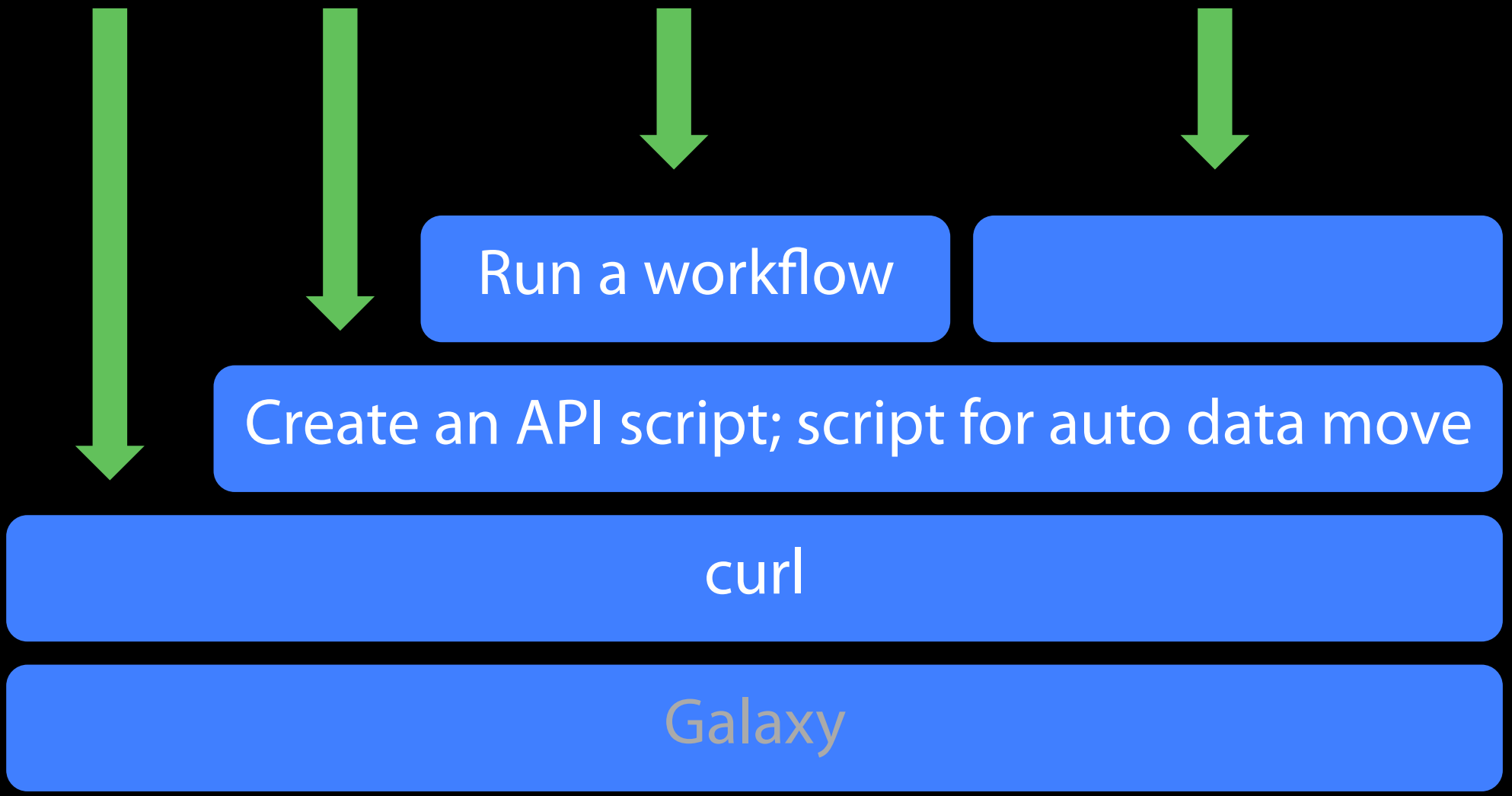
```
./{action}.py <api key> http://<ip>/api/{module}/[unit] [args]

action: create | display | update | delete

api_key: obtained from the UI

module: datasets | forms | histories | libraries | permissions |
quotas | requests | roles | samples | tools | users |
visualizations | workflows

unit: dataset_id / history_id / library_id / …

args: name / key-value pair / …
```

Install a few things in the VM

sudo apt-get install gnome-terminal ipython python-pip

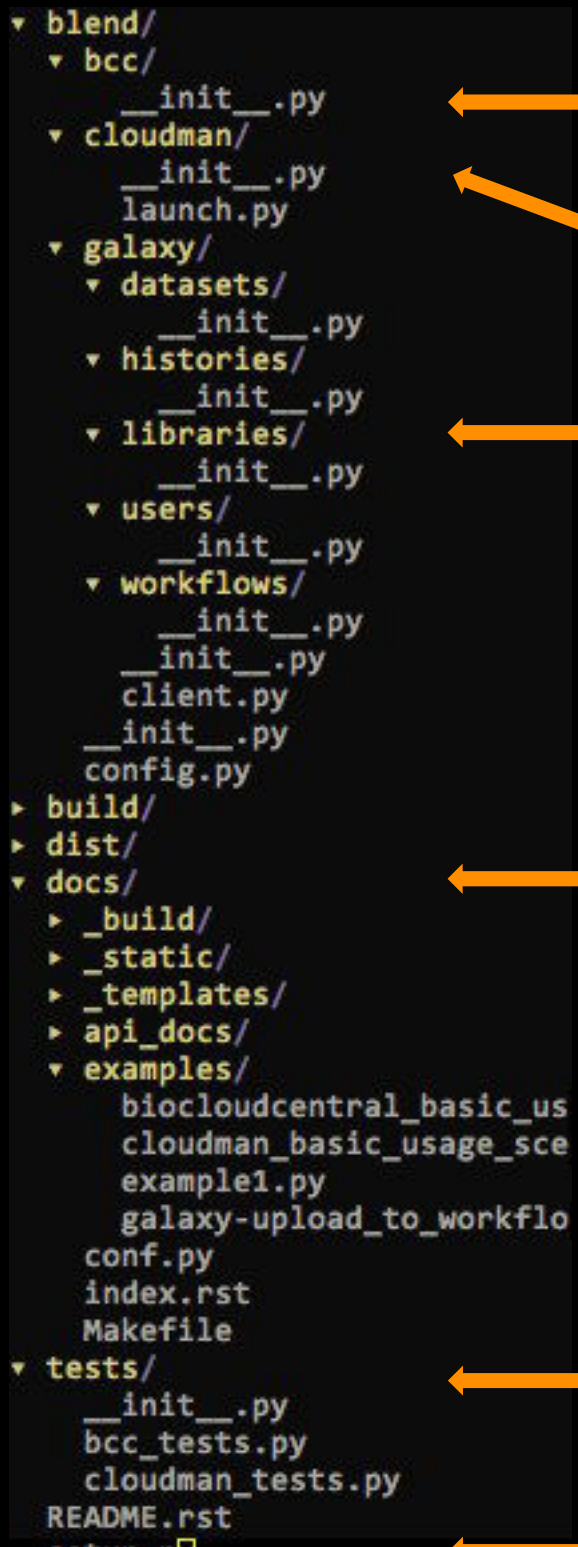
Hands on time

Workshop tasks



blend

- A python library for interacting with Galaxy's API
- And CloudMan



Request compute infrastructure

Manipulate compute infrastructure

Upload data and run analyses

Docs and examples

Test

Distribute

Automate repetitive tasks

Docs and examples included
http://blend.readthedocs.org/

Project Versions

latest

RTD Search

Go

Full-text doc search.

Table Of Contents

Blend
- About
- Installation
- Usage
- Development
- API Documentation
  - BioCloudCentral.org AP
  - CloudMan API
  - Galaxy API
- Testing
- Getting help
- Indices and tables

Next topic

API documentation for interacti

This Page

Show Source

Blend

About

Blend is a Python (2.6 or higher) library for interacting with BioCloudCentral.org, CloudMan, and Galaxy's API. Conceptually, it makes it possible to script and automate the process of cloud infrastrucutre provisioning and scaling, as well as running of analyses within Galaxy. In reality, it makes it possible to do things like this:

- Create a CloudMan compute cluster, via an API and directly from your local machine:

```
from blend.cloudman.launch import CloudManLaunch
cml = CloudManLaunch('<your cloud access key>', '<your cloud secret key')
cml.launch('Blend CloudMan', 'ami-<ID>', 'm1.small', 'password')
cml.get_status()
```

- Manipulate your CloudMan instance and react to the current needs:

```
from blend.cloudman import CloudMan
cm = CloudMan("instance IP", "password")
cm.initialize(type="Galaxy")
cm.add_nodes(3)
cluster_status = cm.get_status()
cm.remove_nodes(2)
```

- Interact with Galaxy via a straighforward API:

```
from blend.galaxy import GalaxyInstance
gi = GalaxyInstance('<Galaxy IP>', key='your API key')
libs = gi.libraries.get_libraries()
gi.workflows.show_workflow('workflow ID')
gi.workflows.run_workflow('workflow ID', input_dataset_map)
```

Note

Although this library allows you to blend these three services into a cohesive unit, the library itself can be used with

Install blend

$ sudo pip install blend-lib

$ ipython

Working with Galaxy's API

```
from blend.galaxy import GalaxyInstance
gi = GalaxyInstance('Galaxy IP', key='API key')
gi.libraries.get_libraries()
w = gi.workflows.get_workflows()[0]
gi.workflows.show_workflow(w['id'])
gi.histories.get_histories(name='Unnamed history')
```

Running an analysis

1. Create a data library and upload some data into it
2. Create a history
3. Execute a workflow

Import a workflow

Use the Galaxy UI:

Workflows -> Import Workflow

http://tinyurl.com/gcc-wf

```
from blend.galaxy import GalaxyInstance
# Define a connection to an instane of Galaxy
gi = GalaxyInstance('http://127.0.0.1:8085', 'c18666899798c5ad233c511cd2d66c2d')
# Create a data library
l = gi.libraries.create_library('WS6')
# Uload some data to the data library
d1 = gi.libraries.upload_file_from_url(l[0]['id'], 'http://tinyurl.com/gcc-exons')
d2 = gi.libraries.upload_file_from_url(l[0]['id'], 'http://tinyurl.com/gcc-snps')
# Create a history
gi.histories.create_history('Run 6')
# Get information on how to run a workflow
ws = gi.workflows.get_workflows()
w = gi.workflows.show_workflow(ws[0]['id'])
# {u'id': u'93ab6bbd094e1dcd',
#  u'inputs': {u'1': {u'label': u'Input Dataset', u'value': u''},
#  u'3': {u'label': u'Input Dataset', u'value': u''}},
#  u'name': u'Demo workflow',
#  u'url': u'/api/workflows/93ab6bbd094e1dcd'}
dataset_map = {'1': {'id':d1[0]['id'], 'src':'ld'},
               '3': {'id':d2[0]['id'], 'src':'ld'}}
wr = gi.workflows.run_workflow(w['id'], dataset_map, h['id'])
hl = gi.histories.get_histories()
gi.histories.show_history(hl[0]['id'], contents=True)
```

Blend's state: *public comment*

- Blend wraps Galaxy's existing API
  - It does not add any functionality but simply exposes it as a python library
- About half of Galaxy's API have been wrapped
  - What's not yet there is the sequencer integration & forms API
- Read the docs: blend.readthedocs.org