Une IDS scalable et résiliente avec geOrchestra & docker

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camptocamp
INNOVATIVE SOLUTIONS
BY OPEN SOURCE EXPERTS

11 mai 2016

geOrchestra ?

README.md

geOrchestra

build passing codacy C

geOrchestra is a complete **Spatial Data Infrastructure** solution.

It features a **metadata catalog** (GeoNetwork 3.0.4), an **OGC server** (GeoServer 2.8.2 and GeoWebCache 1.8.0) with fine-grained access control (based on GeoFence), an **advanced viewer and editor**, an **extractor** and **many more** (security and auth system based on proxy/CAS/LDAP, analytics, admin UIs, ...)

Releases

A new release is published every 6 months and is supported during 12 months. Stable versions are named by their release date, eg 14.06 was published in June 2014.

Before downloading, you might be interested in the release notes and the kanban board we're using to manage issues.

https://github.com/georchestra/georchestra

In a Nutshell, geOrchestra...

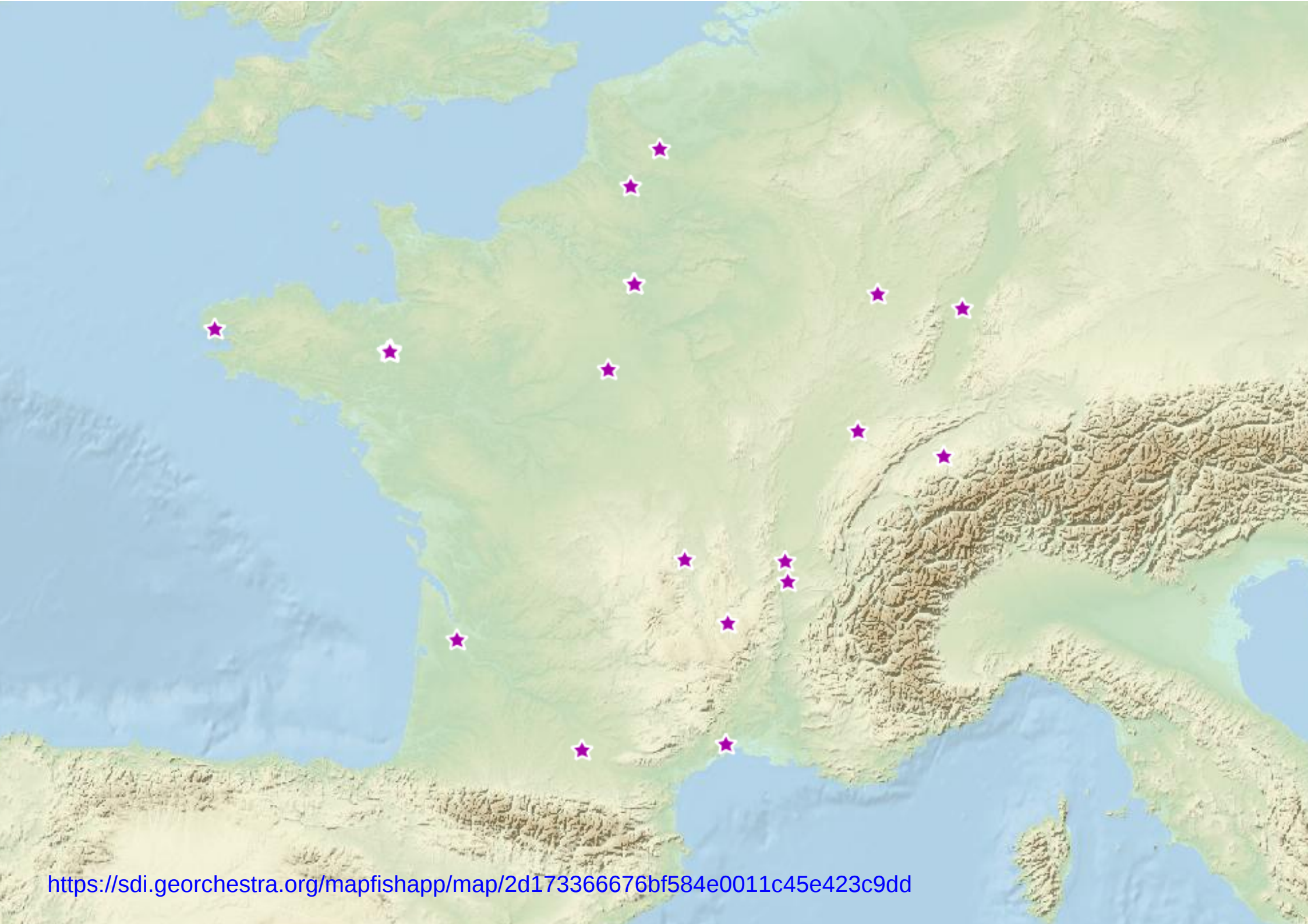
... has had 6,113 commits made by 36 contributors
representing 294,044 lines of code

... is mostly written in JavaScript
with an average number of source code comments

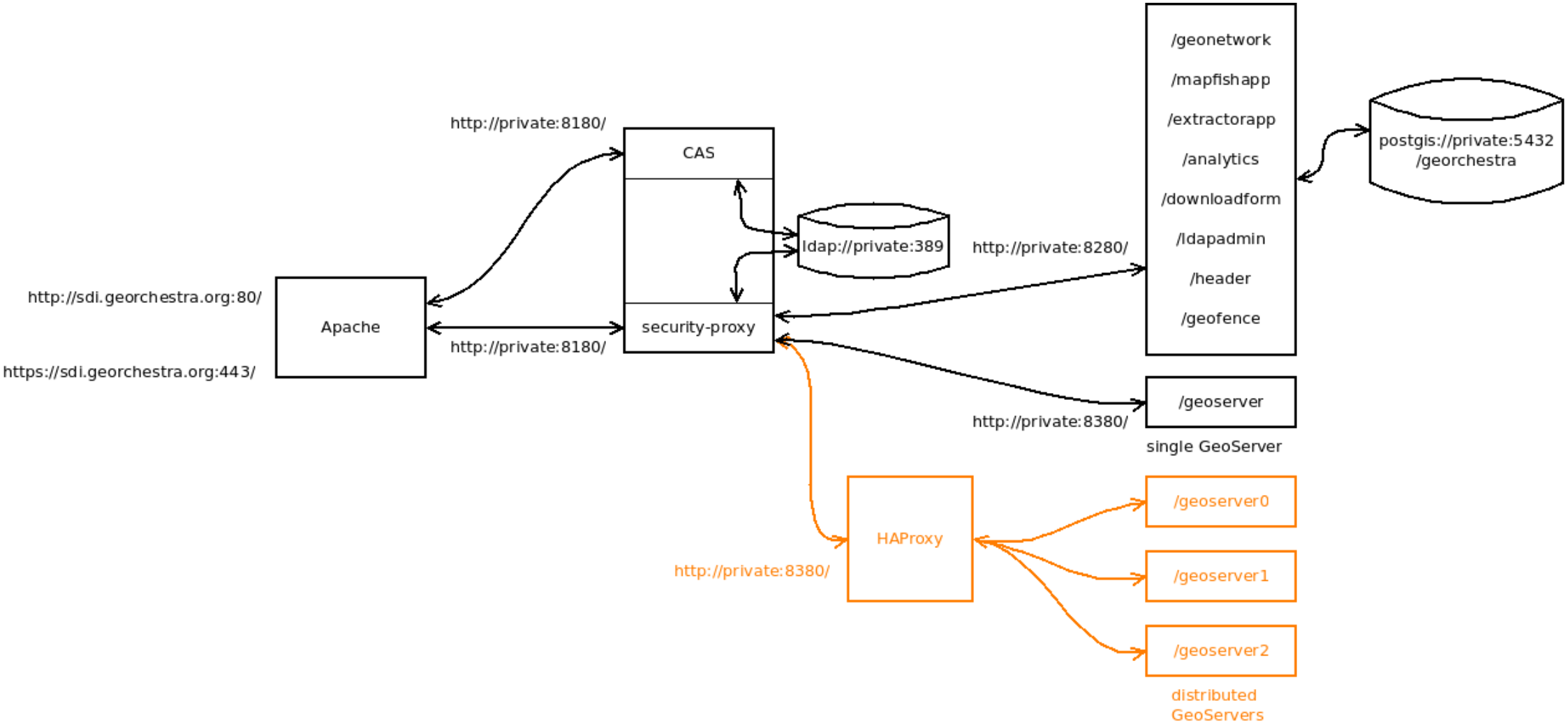
... has a codebase with a long source history
maintained by a large development team
with stable Y-O-Y commits

... took an estimated 76 years of effort (COCOMO model)
starting with its first commit in May, 2011
ending with its most recent commit 28 days ago

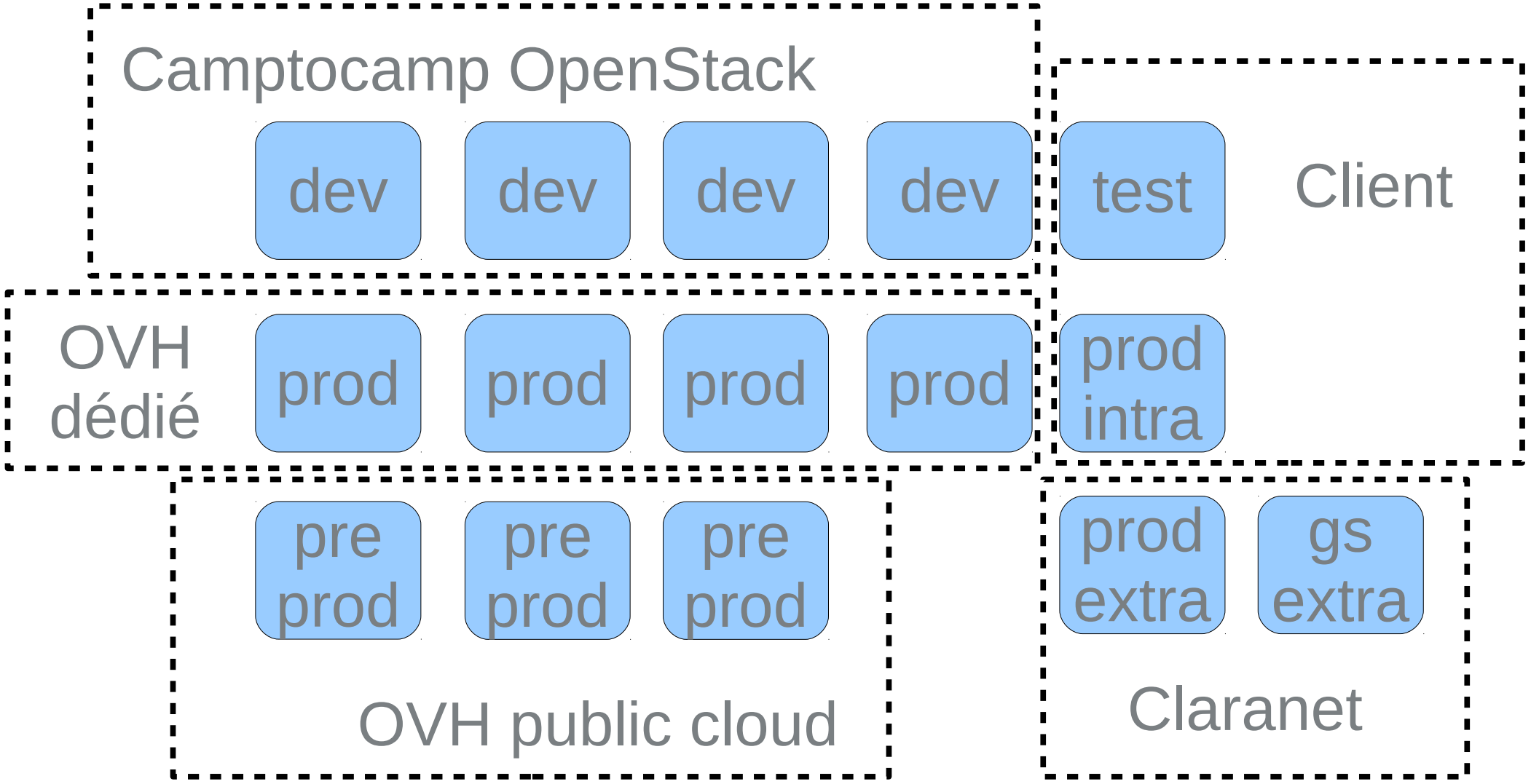
https://www.openhub.net/p/georchestra


https://sdi.georchestra.org/mapfishapp/map/2d173366676bf584e0011c45e423c9dd


GeoCom2015
Région Alsace, France
june 22/24 2015
ENJOY&
SMILE


/geonetwork
/mapfishapp
/extractorapp
/analytics
/downloadform
/ldapadmin
/header
/geofence
postgis://private:5432
/georchestra
http://private:8180/
CAS
ldap://private:389
http://private:8280/
http://sdi.georchestra.org:80/
Apache
security-proxy
https://sdi.georchestra.org:443/
http://private:8180/
/geoserver
http://private:8380/
single GeoServer
HAProxy
/geoserver0
/geoserver1
/geoserver2
http://private:8380/
distributed
GeoServers

Contexte de production

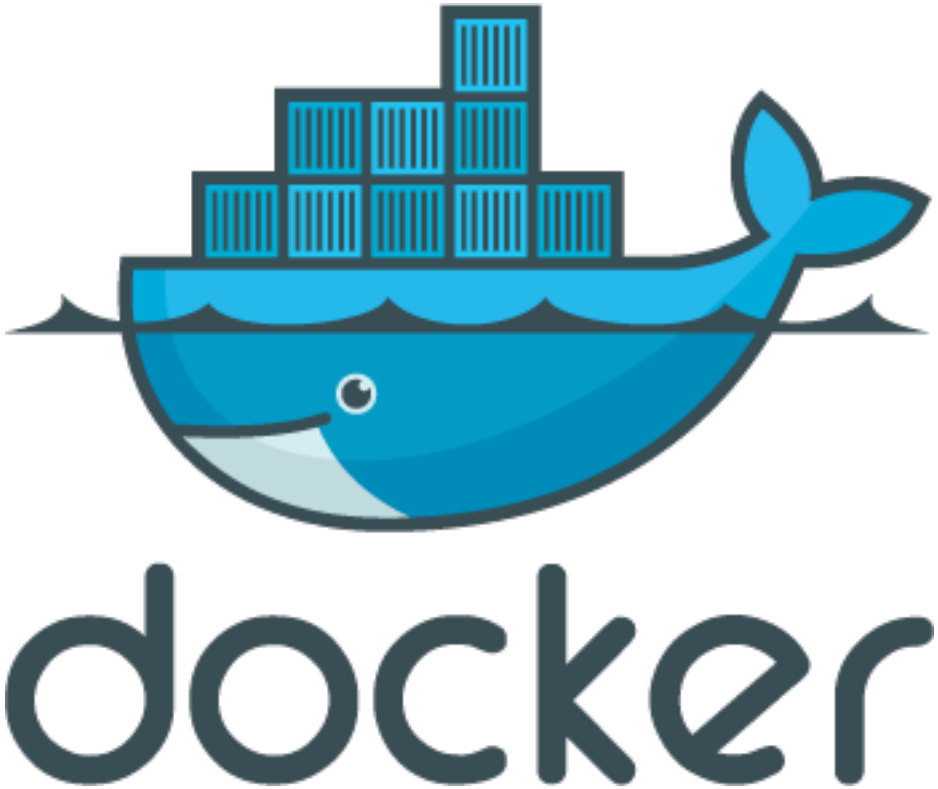


Comment on passe à l'échelle ?

Ce que nos clients attendent ...

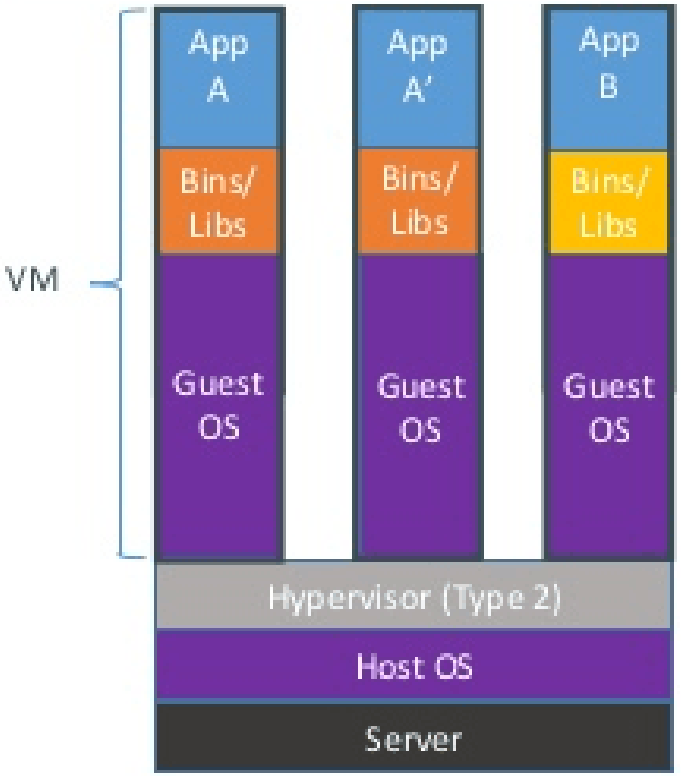
- Une disponibilité maximale :
  - De leurs services (OGC, REST...)
  - Des équipes camptocamp (assistance)
- L'assurance que leurs données sont en sécurité
  - Backups
  - Applicatifs à jour
- La capacité à restaurer rapidement une plateforme

Comment on répond à ces besoins ?

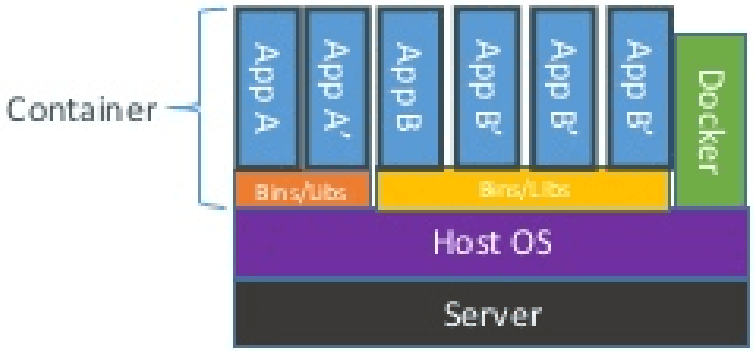


Docker is an open-source project to easily create lightweight, portable, self-sufficient containers from any application. The same container that a developer builds and tests on a laptop can run at scale, in production, on VMs, bare metal, OpenStack clusters, public clouds and more.

Containers vs. VMs



Containers are isolated, but share OS and, where appropriate, bins/libraries



Ce qu'on y gagne ...

Des applications vraiment portables ...

Branch: **15.12** ▾ **georchestra** / mapfishapp / src / docker / **Dockerfile** — **Find file** | **Copy path**

 **pmauduit** extractor, mapfishapp - removing useless dependency — bd3865f on Apr 4

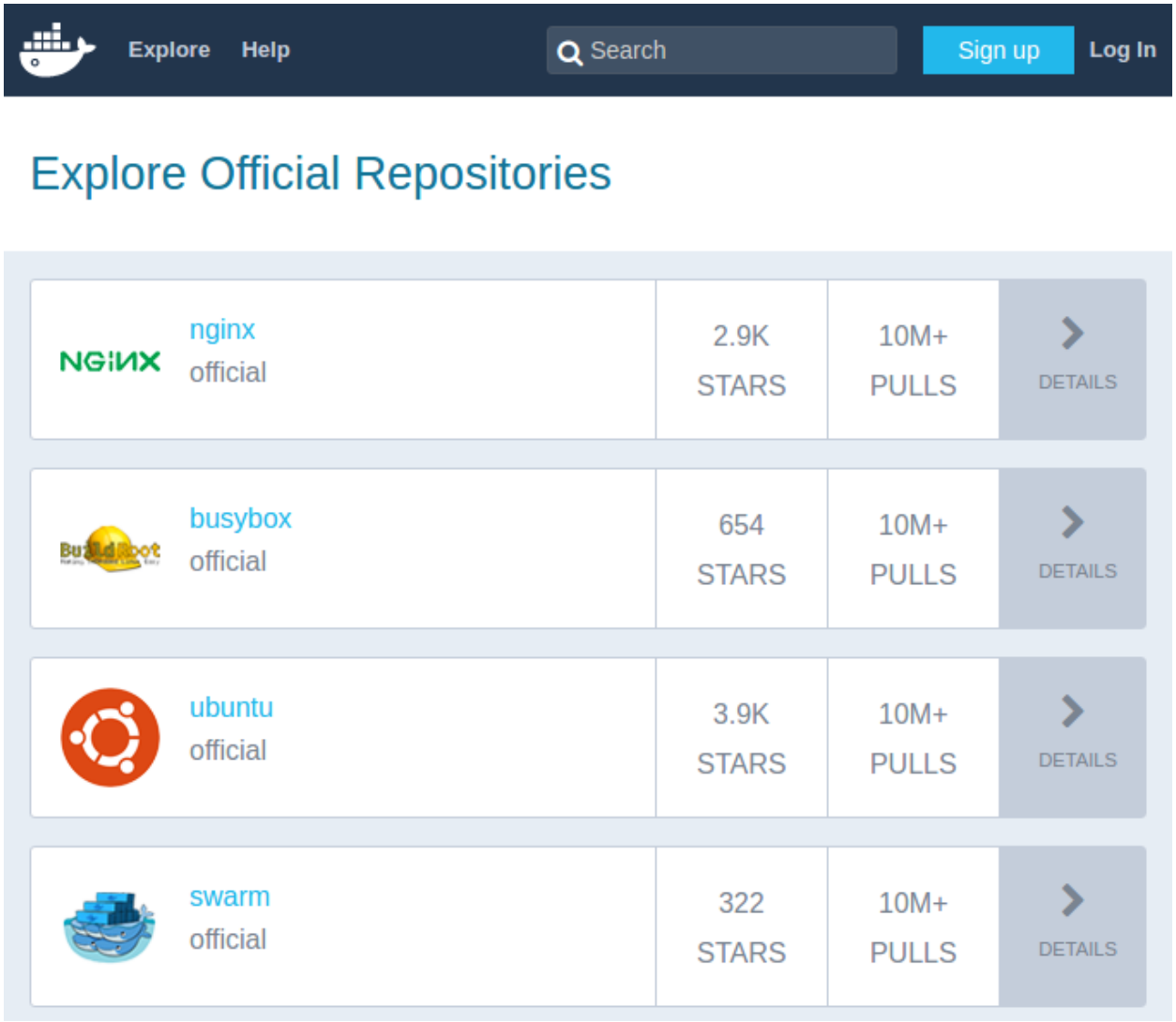
3 contributors 

19 lines (10 sloc) | 466 Bytes — **Raw** | **Blame** | **History**

```
1  FROM jetty:9.3-jre8
2
3  ADD . /
4
5  RUN java -jar "$JETTY_HOME/start.jar" --add-to-startd=jmx,jmx-remote,stats
6
7  RUN apt-get update && \
8     apt-get install -y libgdal-java gdal-bin && \
9     rm -rf /var/lib/apt/lists/*
10
11 RUN ln -s /usr/share/java/gdal.jar /var/lib/jetty/lib/ext/
12
13
14 VOLUME [ "/var/local/uploads" ]
15
16 ENTRYPOINT [ "/docker-entrypoint.sh" ]
17 CMD ["java","-Djava.io.tmpdir=/tmp/jetty", "-Dgeorchestra.datadir=/etc/georchestra","-jar","/usr/local/jetty/start.jar"]
18
```


Une garantie de reproductibilité et réversibilité des déploiements ...

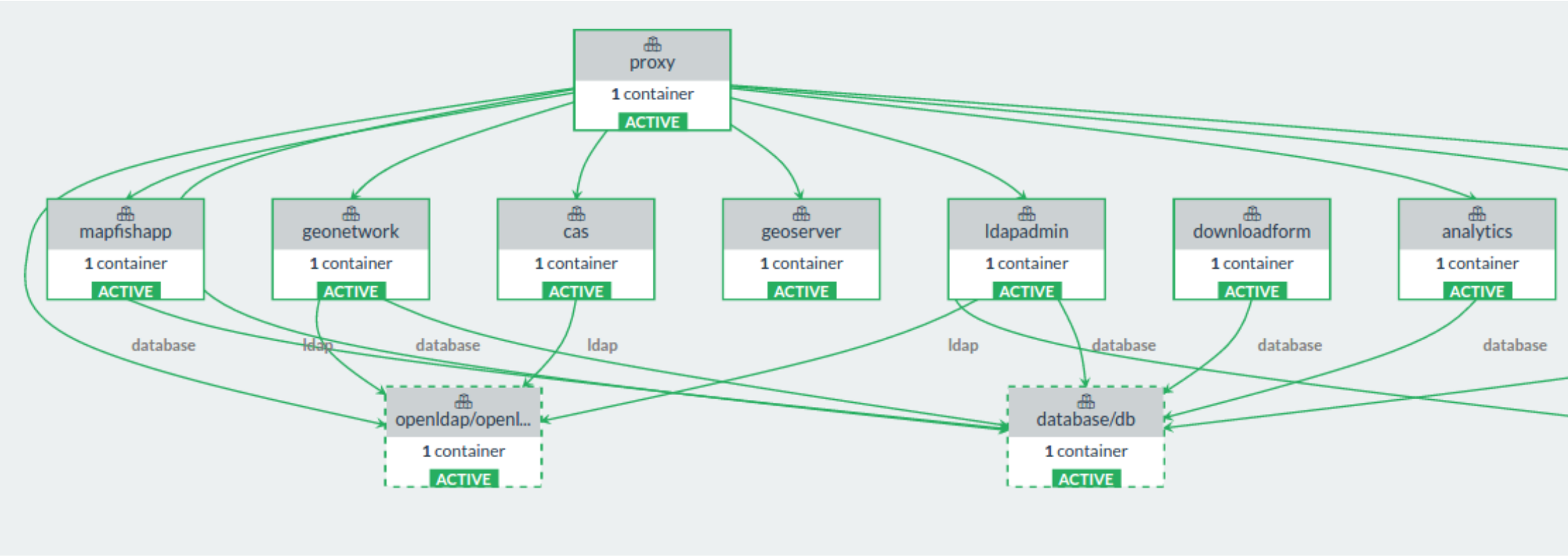
https://hub.docker.com/



Une excellente séparation code / données

```
geoserver:
  image: camptocamp/georchestra_geoserver:15.12-1${GEOSERVER_TAG}
  volumes:
    - geoserver_datadir:/var/local/geoserver
    - geoserver_geodata:/var/local/geodata
    - geoserver_tiles:/var/local/tiles
  links:
    - ${LDAP_SERVICE}:ldap
    - ${DB_SERVICE}:database
    - ${POSTGIS_SERVICE}:postgis
```


Une architecture au carré ...



https://github.com/georchestra/georchestra/blob/15.12/docker-compose.yml

La possibilité de remonter rapidement une machine ...

README.md

Conplicity

https://github.com/camptocamp/conplicity

docker pulls 287 | build passing | by camptocamp

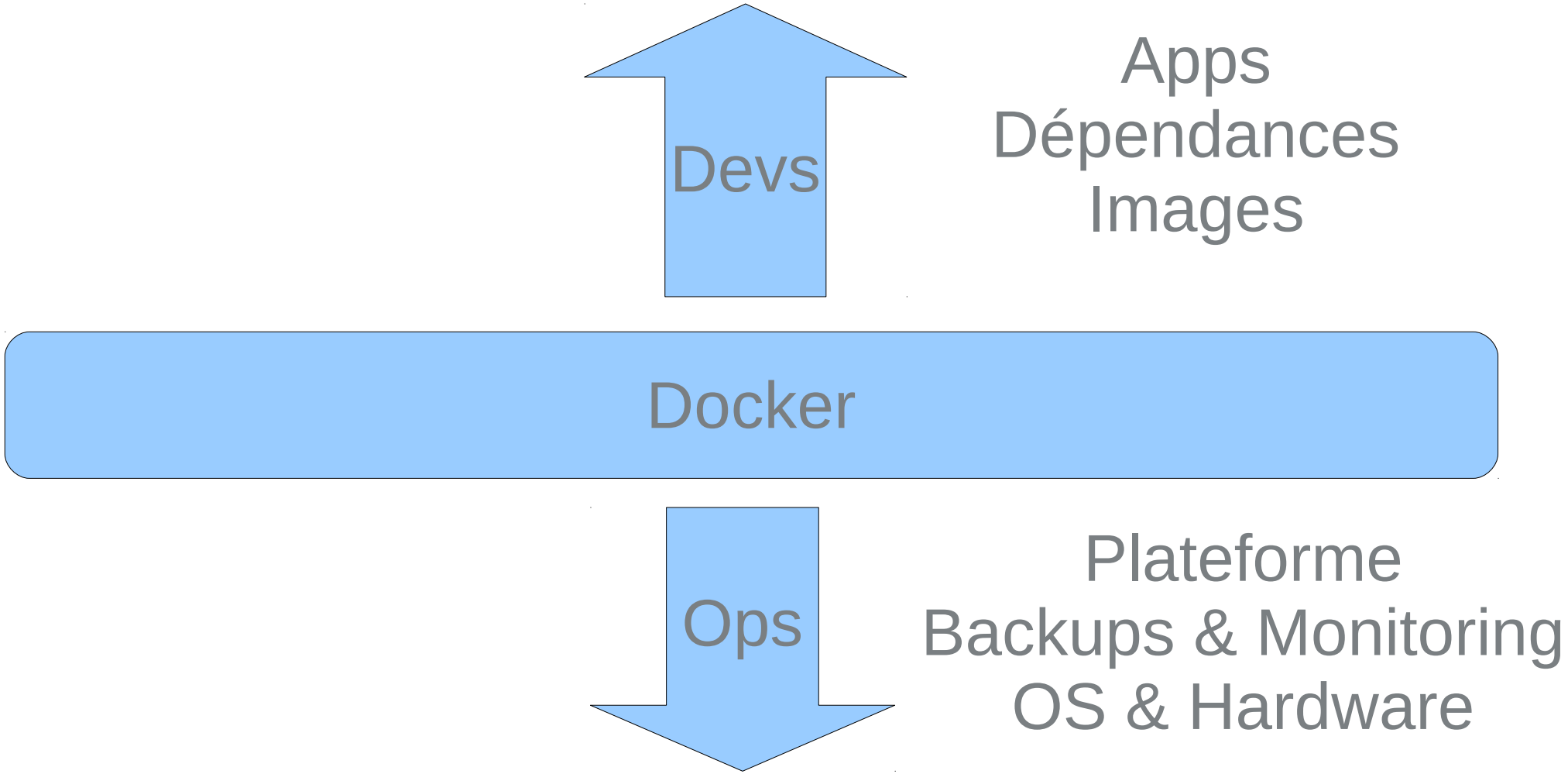
conplicity lets you backup all your named docker volumes using duplicity.

Examples

Backup all named volumes to S3

```
$ DUPLICITY_TARGET_URL=s3://s3-eu-west-1.amazonaws.com/<my_bucket>/<my_dir> \
  AWS_ACCESS_KEY_ID=<my_key_id> \
  AWS_SECRET_ACCESS_KEY=<my_secret_key> \
    conplicity
```


Une interface très claire entre Devs et Ops

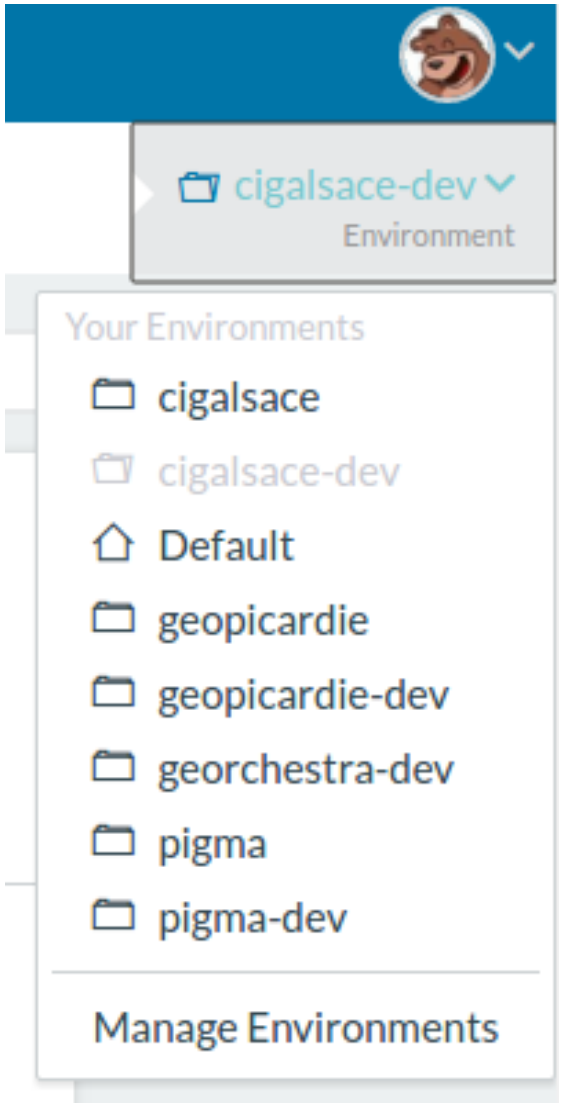


Avec Docker,
nous utilisons également ...

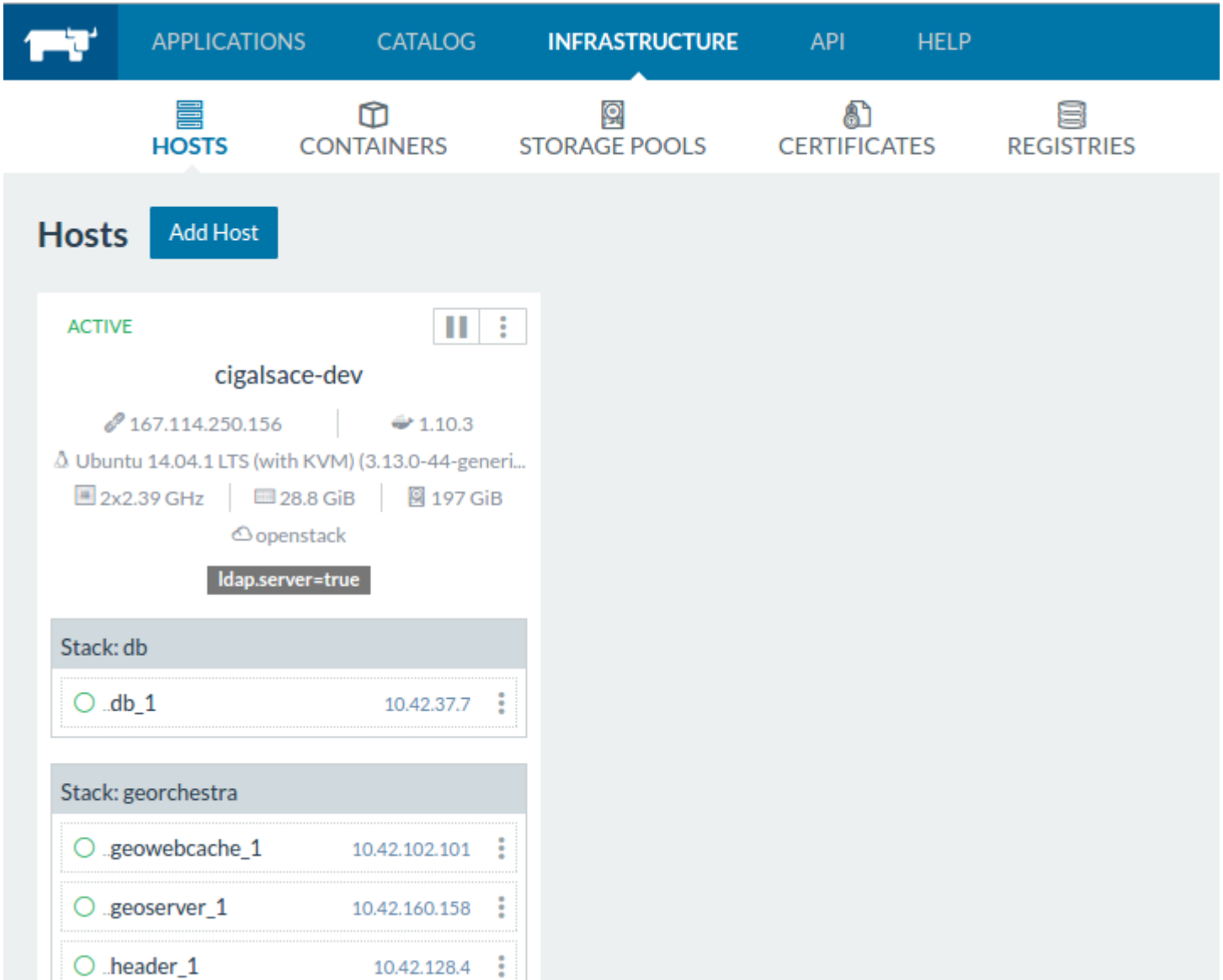
Une plateforme de gestion de containers ...

RANCHER

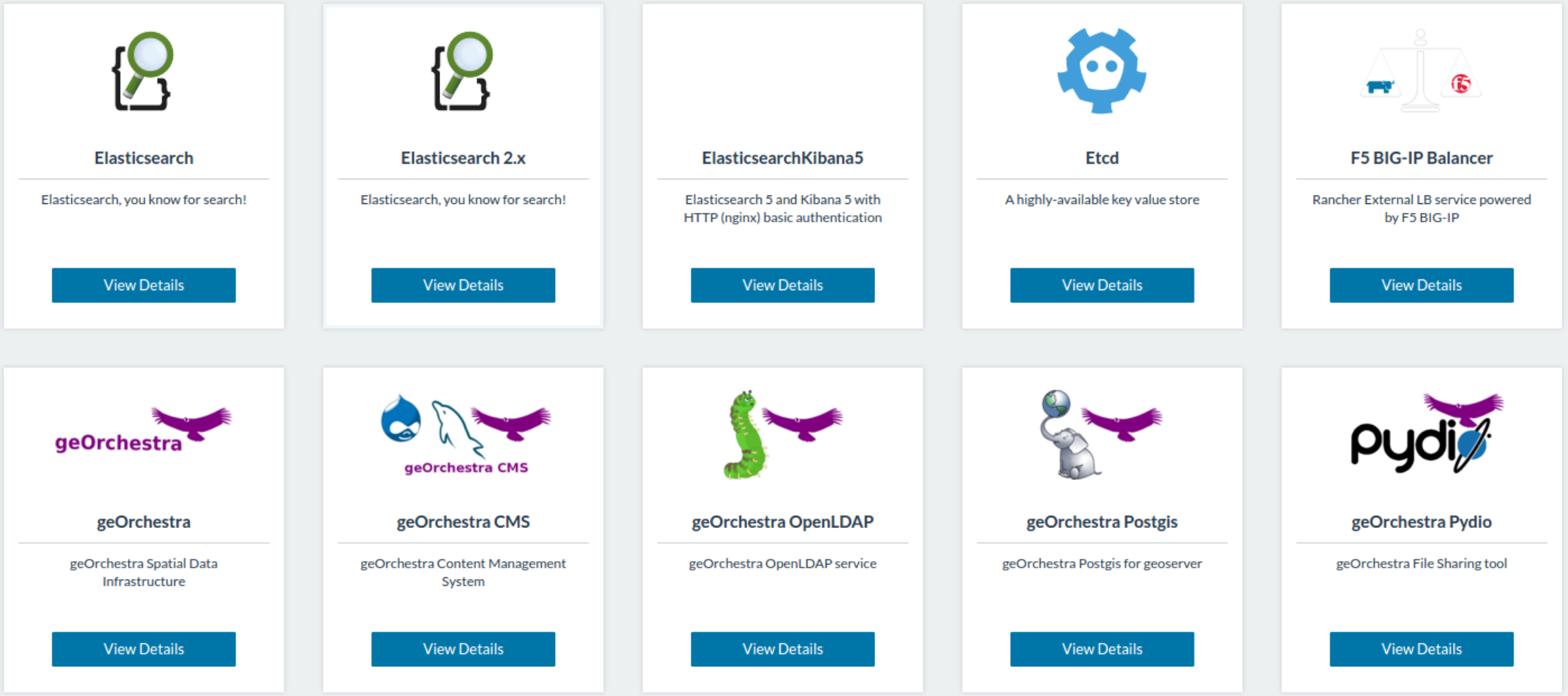
Rancher permet de gérer différents *environnements*

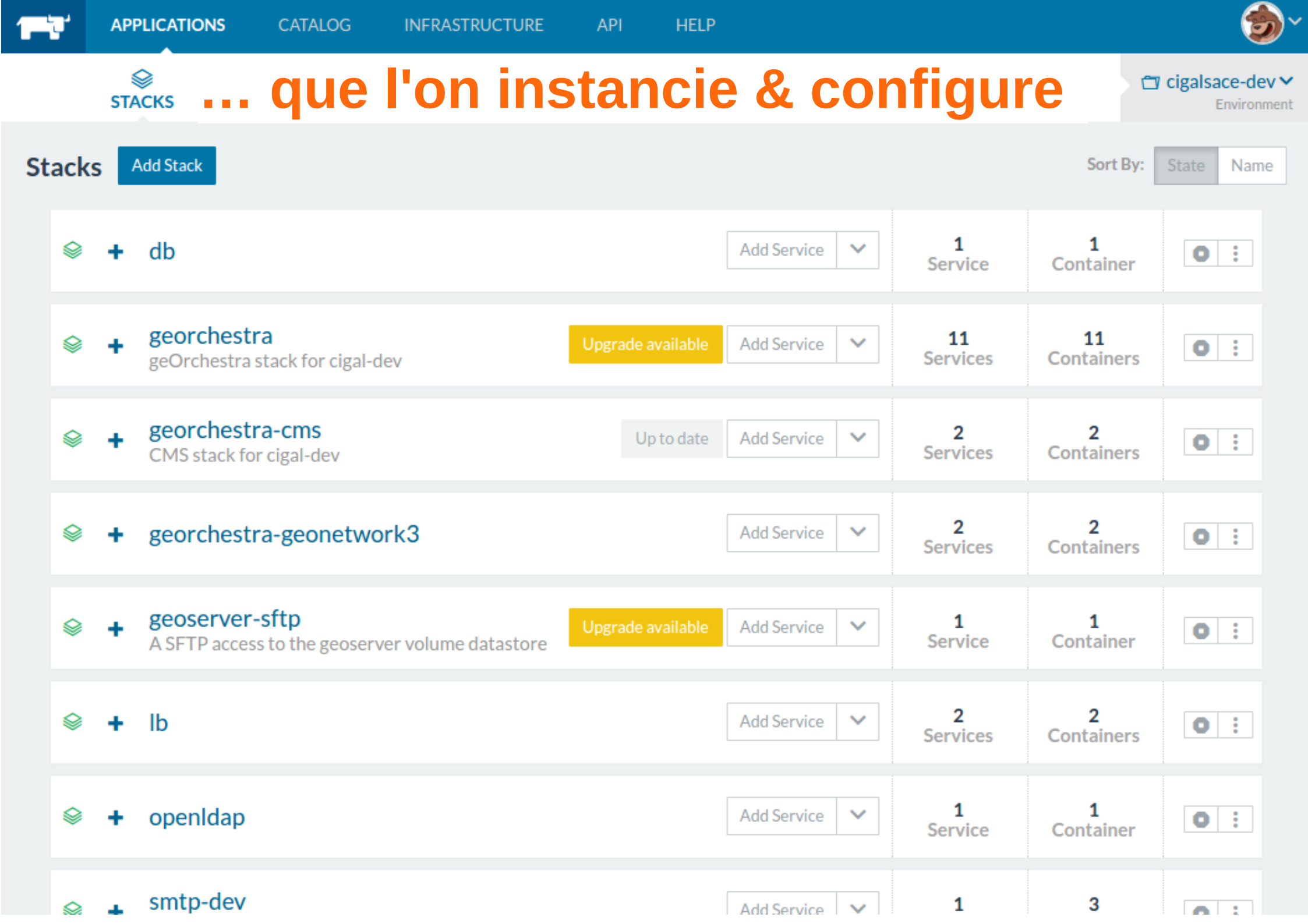


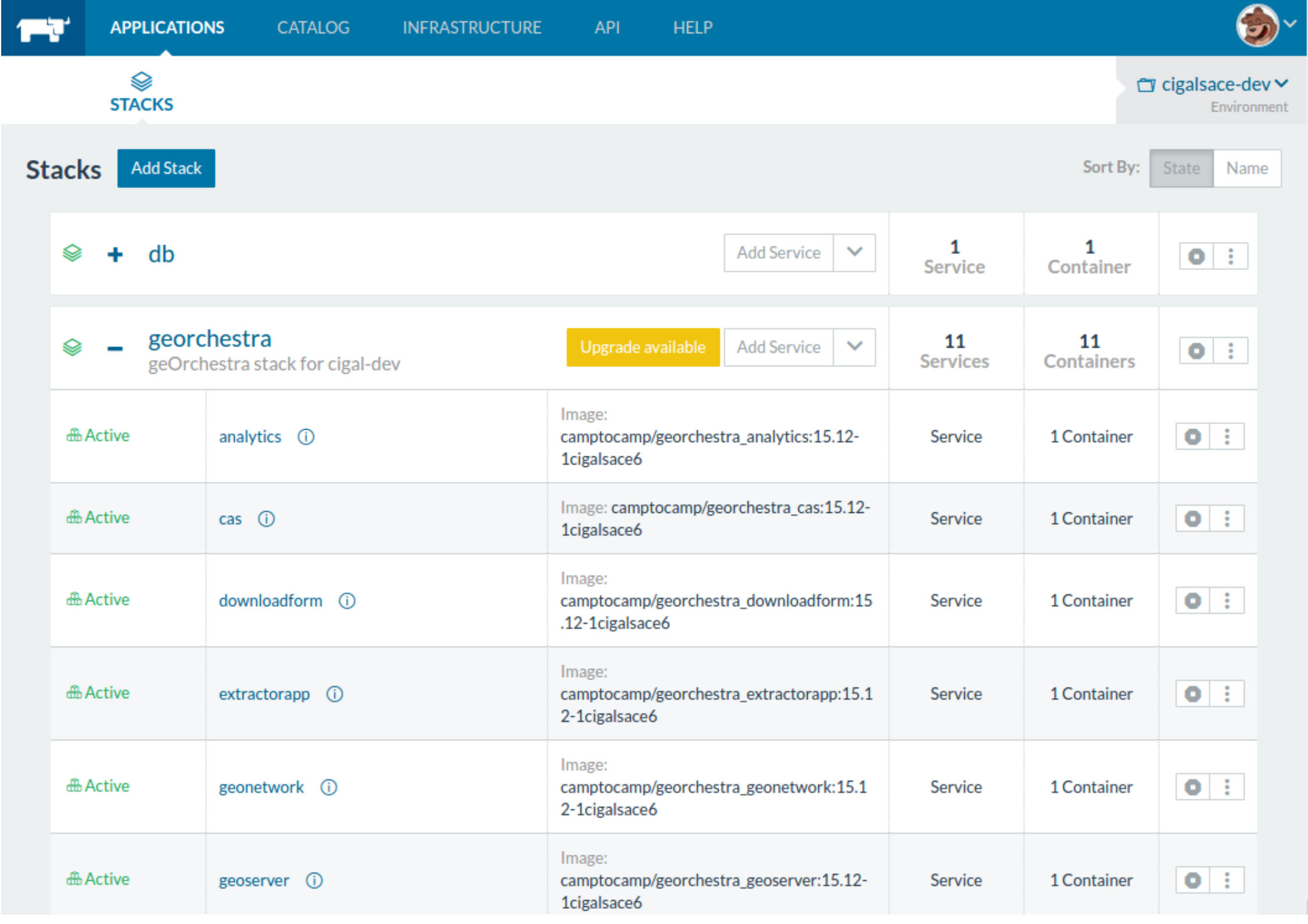
Pour chaque environnement, on référence une ou plusieurs machines « hôtes » ...



Rancher propose un catalogue de « stacks »




APPLICATIONS
CATALOG
INFRASTRUCTURE
API
HELP
STACKS
… que l'on instancie & configure
cigalsace-dev
Environment
Stacks
Add Stack
Sort By:
State
Name
db
Add Service
1 Service
1 Container
georchestra
geOrchestra stack for cigal-dev
Upgrade available
Add Service
11 Services
11 Containers
georchestra-cms
CMS stack for cigal-dev
Up to date
Add Service
2 Services
2 Containers
georchestra-geonetwork3
Add Service
2 Services
2 Containers
geoserver-sftp
A SFTP access to the geoserver volume datastore
Upgrade available
Add Service
1 Service
1 Container
lb
Add Service
2 Services
2 Containers
openldap
Add Service
1 Service
1 Container
smtp-dev
Add Service
1
3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11
Services
11
Containers
Active
analytics
Image:
camptocamp/georchestra_analytics:15.12-1cigalsace6
Service
1 Container
Active
cas
Image: camptocamp/georchestra_cas:15.12-1cigalsace6
Service
1 Container
Active
downloadform
Image:
camptocamp/georchestra_downloadform:15.12-1cigalsace6
Service
1 Container
Active
extractorapp
Image:
camptocamp/georchestra_extractorapp:15.12-1cigalsace6
Service
1 Container
Active
geonetwork
Image:
camptocamp/georchestra_geonetwork:15.12-1cigalsace6
Service
1 Container
Active
geoserver
Image:
camptocamp/georchestra_geoserver:15.12-1cigalsace6
Service
1 Container

Mais revenons aux besoins de nos clients ...

Applicatifs à jour ?

- CI → Docker Hub → Rancher

- Détection de toute nouvelle version d'une stack « upgrade available »

Résilience ?

En cas de disparition d'une machine du pool d'hôtes, ses conteneurs sont automatiquement déplacés vers celles qui restent

Scalabilité, Disponibilité ?

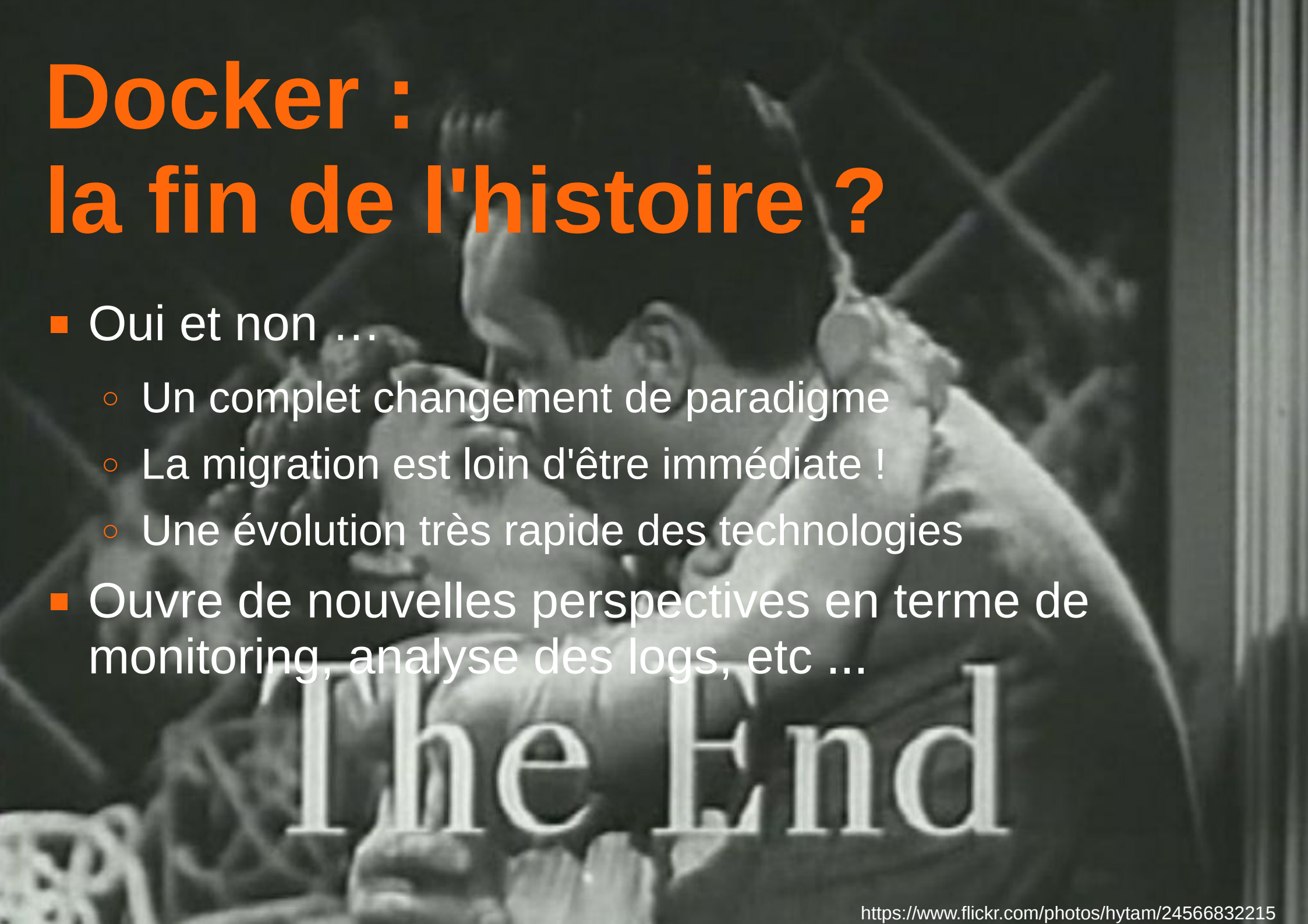
Rancher fournit ce qu'il faut…

- Scalabilité :
  - Image rancher/load-balancer-service
  - Container scale: N !

- Disponibilité :
  - health_checks → sur les apps et services OGC !

Docker : la fin de l'histoire ?

- Oui et non …
  - Un complet changement de paradigme
  - La migration est loin d'être immédiate !
  - Une évolution très rapide des technologies
- Ouvre de nouvelles perspectives en terme de monitoring, analyse des logs, etc ...



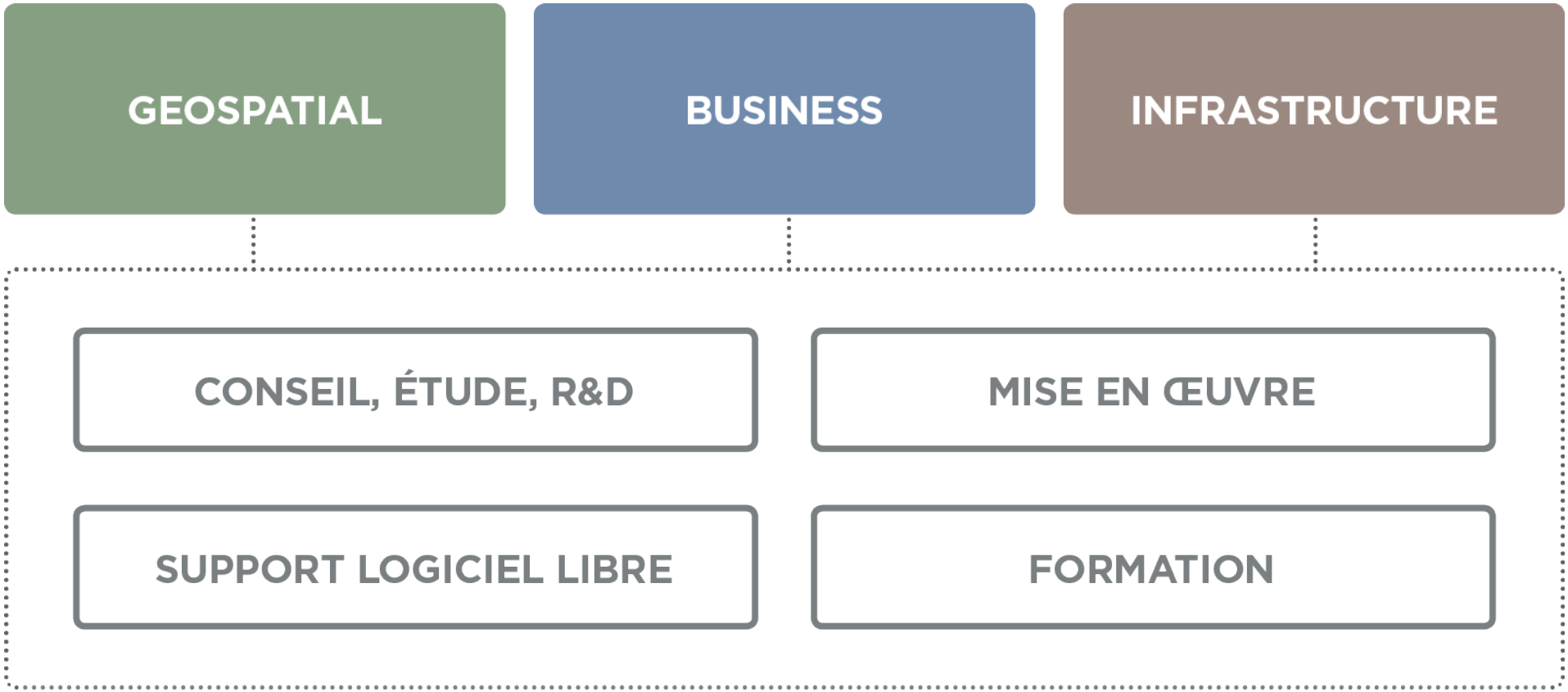
https://www.flickr.com/photos/hytam/24566832215

Par où commencer ?

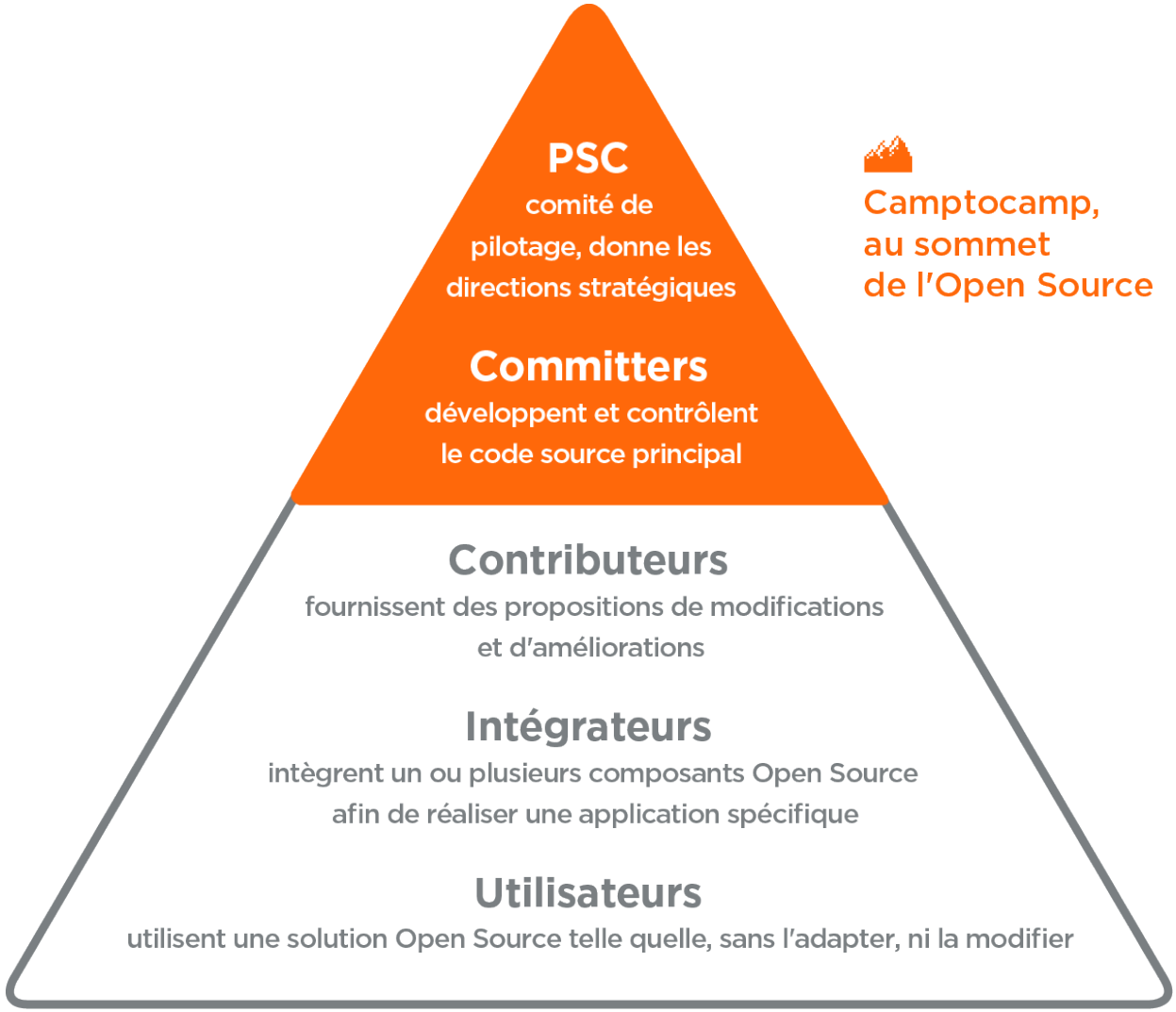
```
$ wget https://raw.githubusercontent.com/georchestra/georchestra/15.12/docker-compose.yml

 $ docker-compose up
```


Camptocamp : notre offre de services



Camptocamp : notre vision de l'Open Source



Camptocamp, au sommet de l'Open Source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