

# Une IDS scalable et résiliente avec geOrchestra & docker

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# geOrchestra ?



# 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

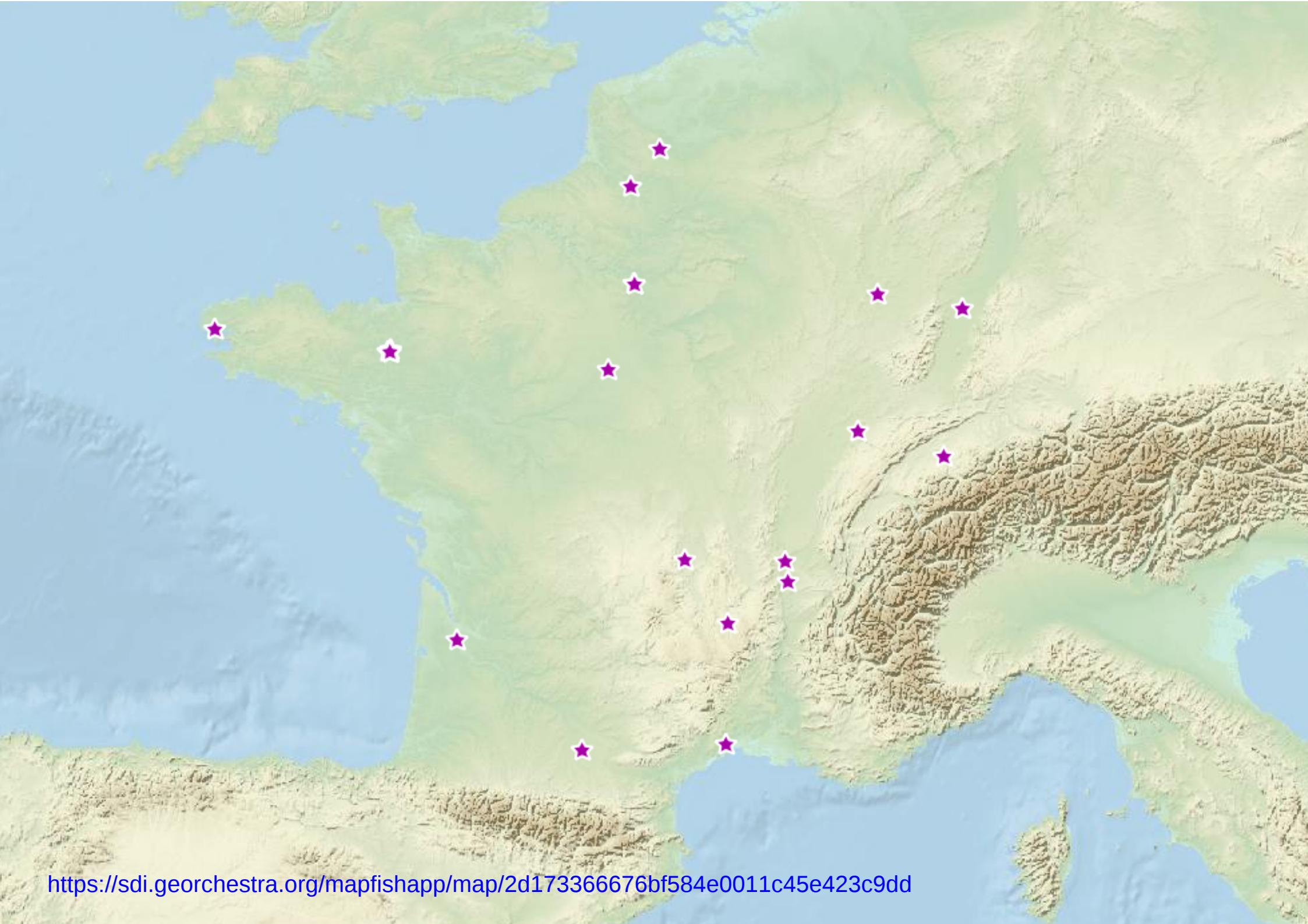
... is mostly written in JavaScript  
with an average number of source code comments

... 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>

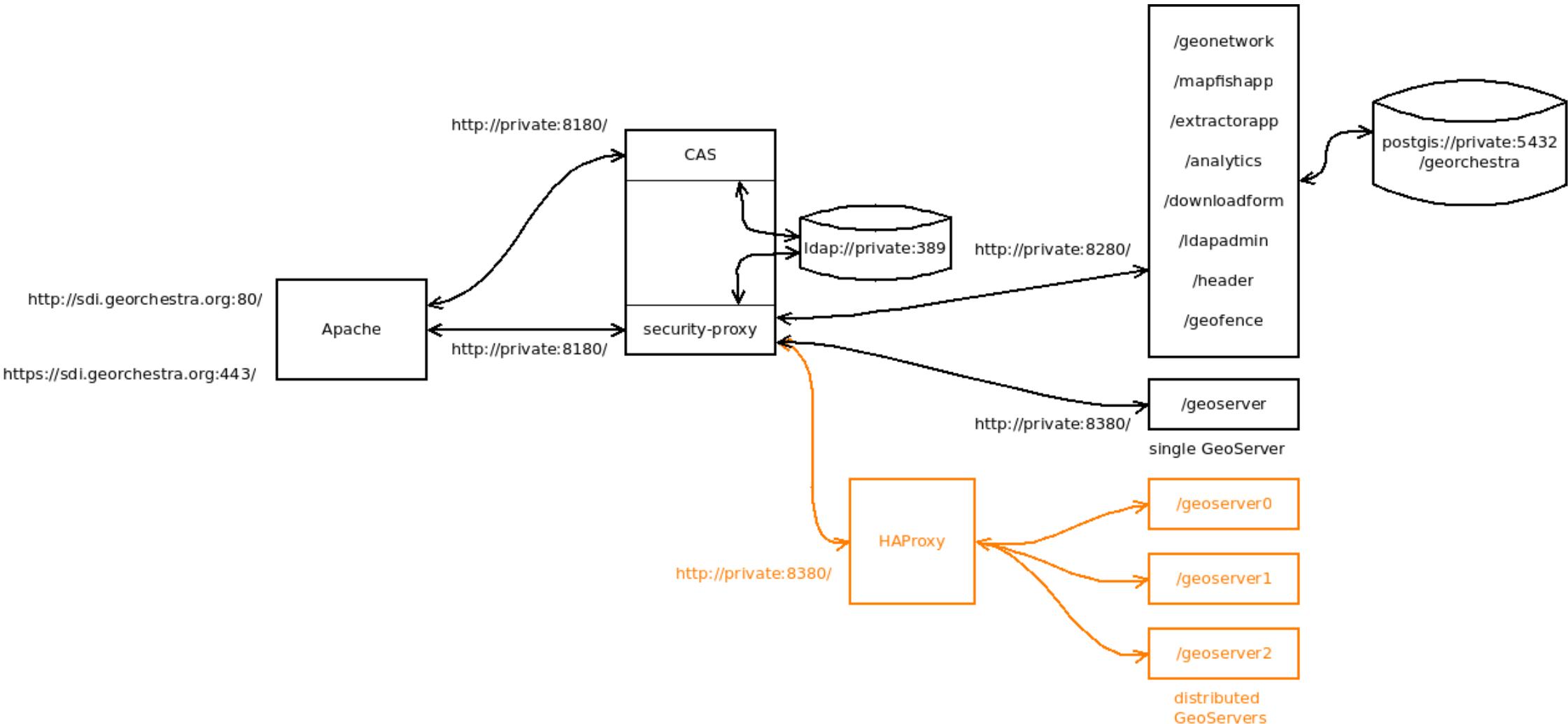


A large group photograph of approximately 35 people, mostly men, posing for a group photo. They are arranged in three rows: a back row standing, a middle row kneeling, and a front row sitting on the ground. The group is diverse in age and attire, with many wearing casual clothing like t-shirts and hoodies, while others are in business attire. A man in the center of the group holds a white rectangular sign with the text "GeoCom2015" in large purple letters, "Région Alsace, France" in smaller purple letters below it, and "june 22/24 2015" at the bottom right.

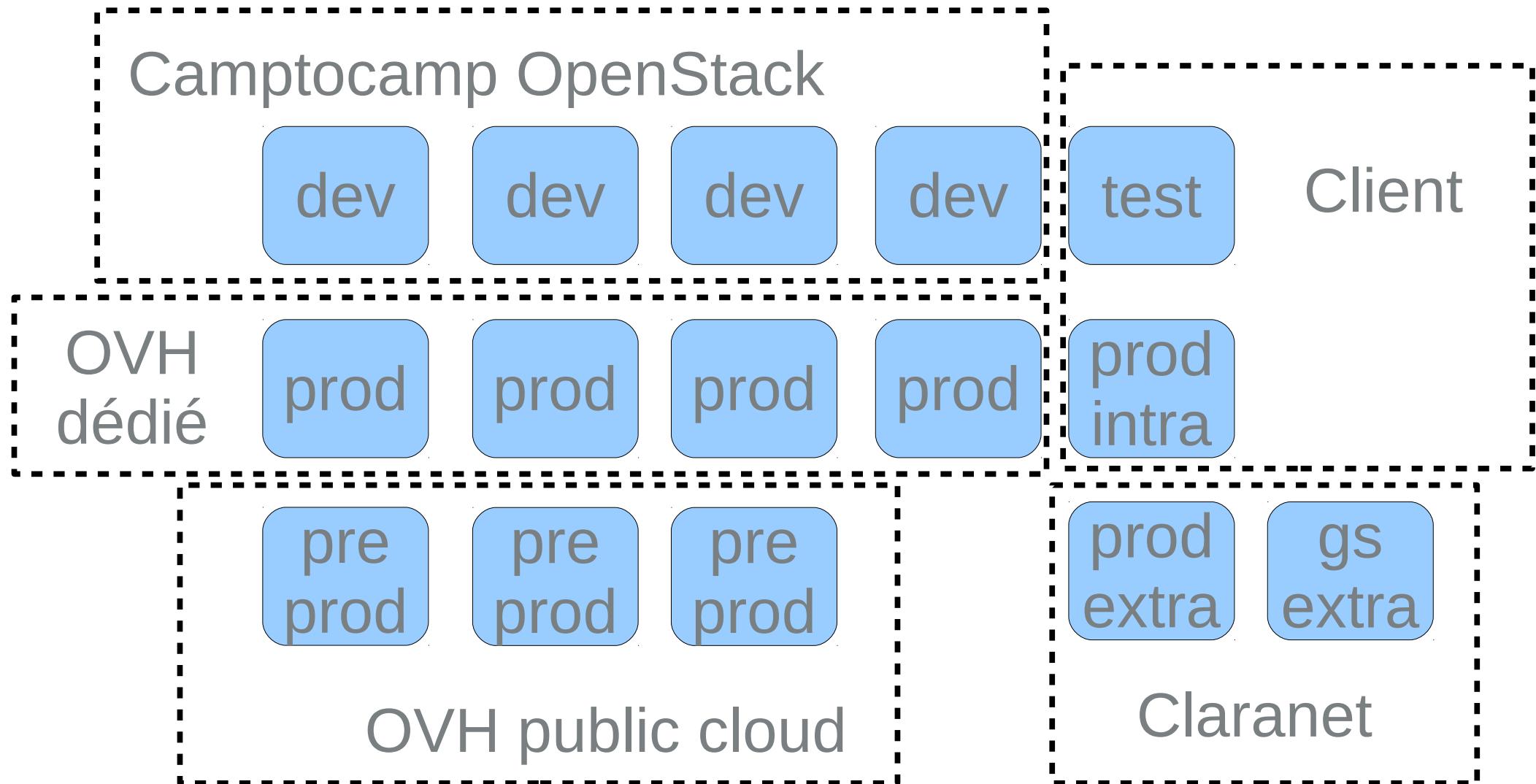
**GeoCom2015**

Région Alsace, France

june 22/24 2015



# Contexte de production



# Comment on passe à l'échelle ?



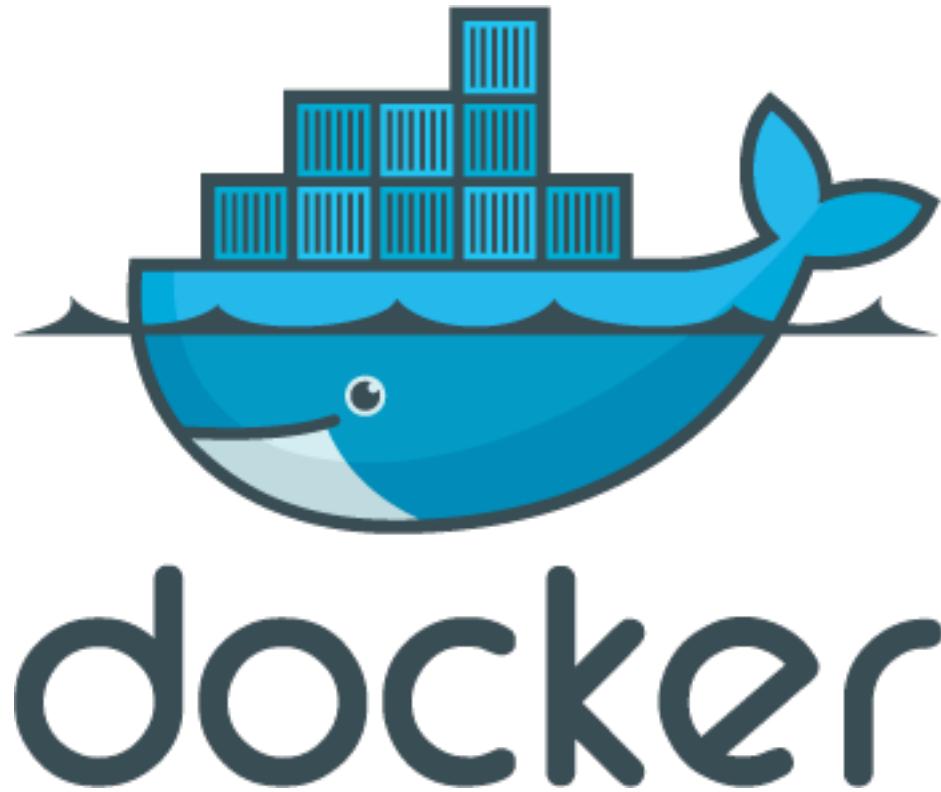
# Ce que nos clients attendent ...

- 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 ?

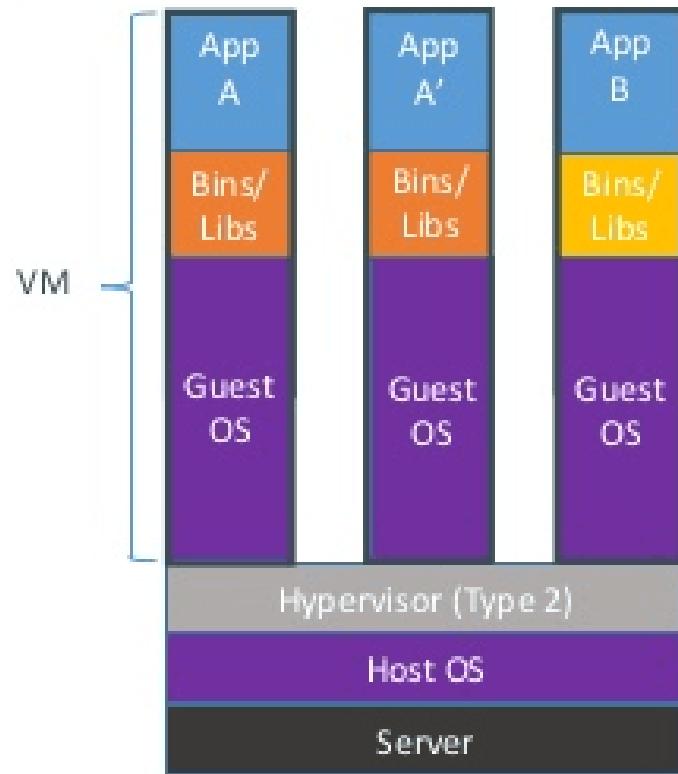




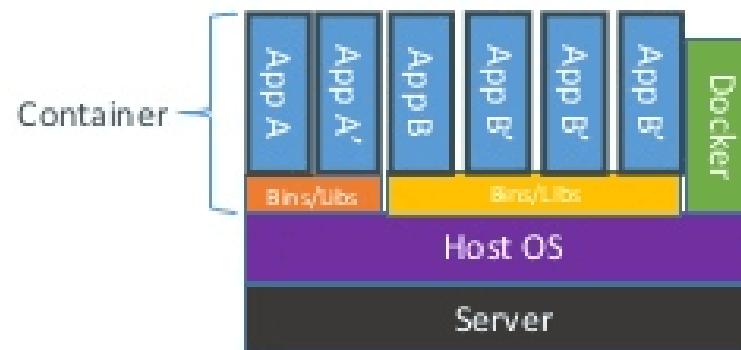
Docker is an open-source project to easily create lightweight, portable, self-sufficient containers from any application. The same container that a developer builds and tests on a laptop can run at scale, in production, on VMs, bare metal, OpenStack clusters, public clouds and more.



# 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](#)

 **pmaudit** 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/>

The screenshot shows the Docker Hub homepage with a dark blue header featuring the Docker logo, 'Explore', 'Help', a search bar, and 'Sign up' and 'Log In' buttons. Below the header, a large blue banner says 'Explore Official Repositories'. The main content displays four cards for official Docker images:

Image	Name	Owner	Stars	Pulls	Action
	nginx	official	2.9K	10M+	<a href="#">DETAILS</a>
	busybox	official	654	10M+	<a href="#">DETAILS</a>
	ubuntu	official	3.9K	10M+	<a href="#">DETAILS</a>
	swarm	official	322	10M+	<a href="#">DETAILS</a>

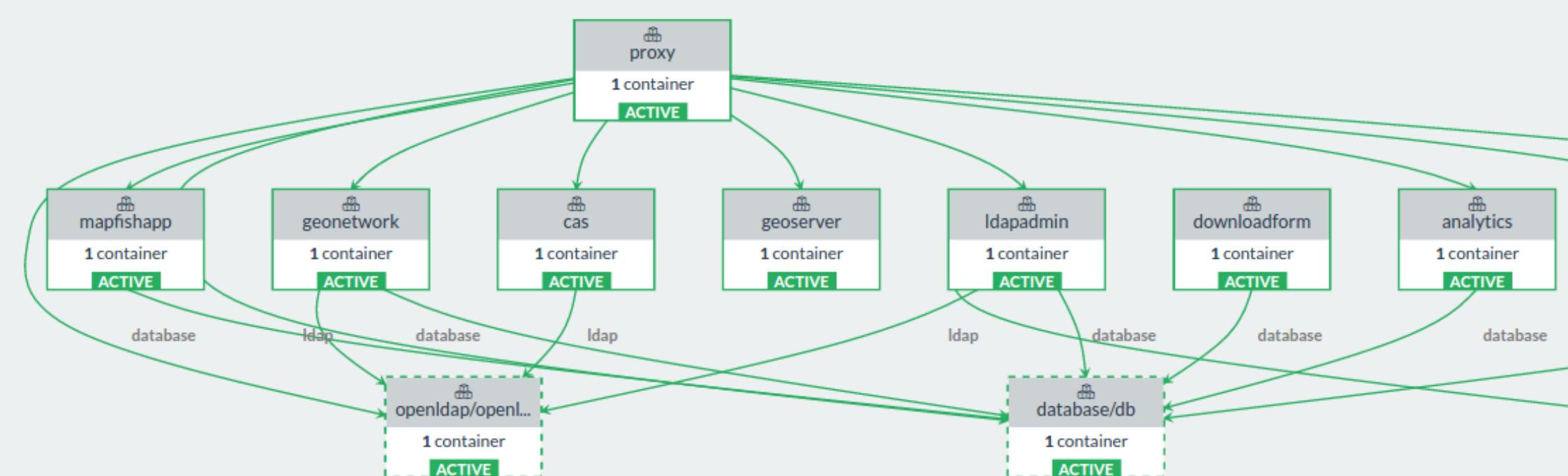


# Une excellente séparation code / données

```
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.

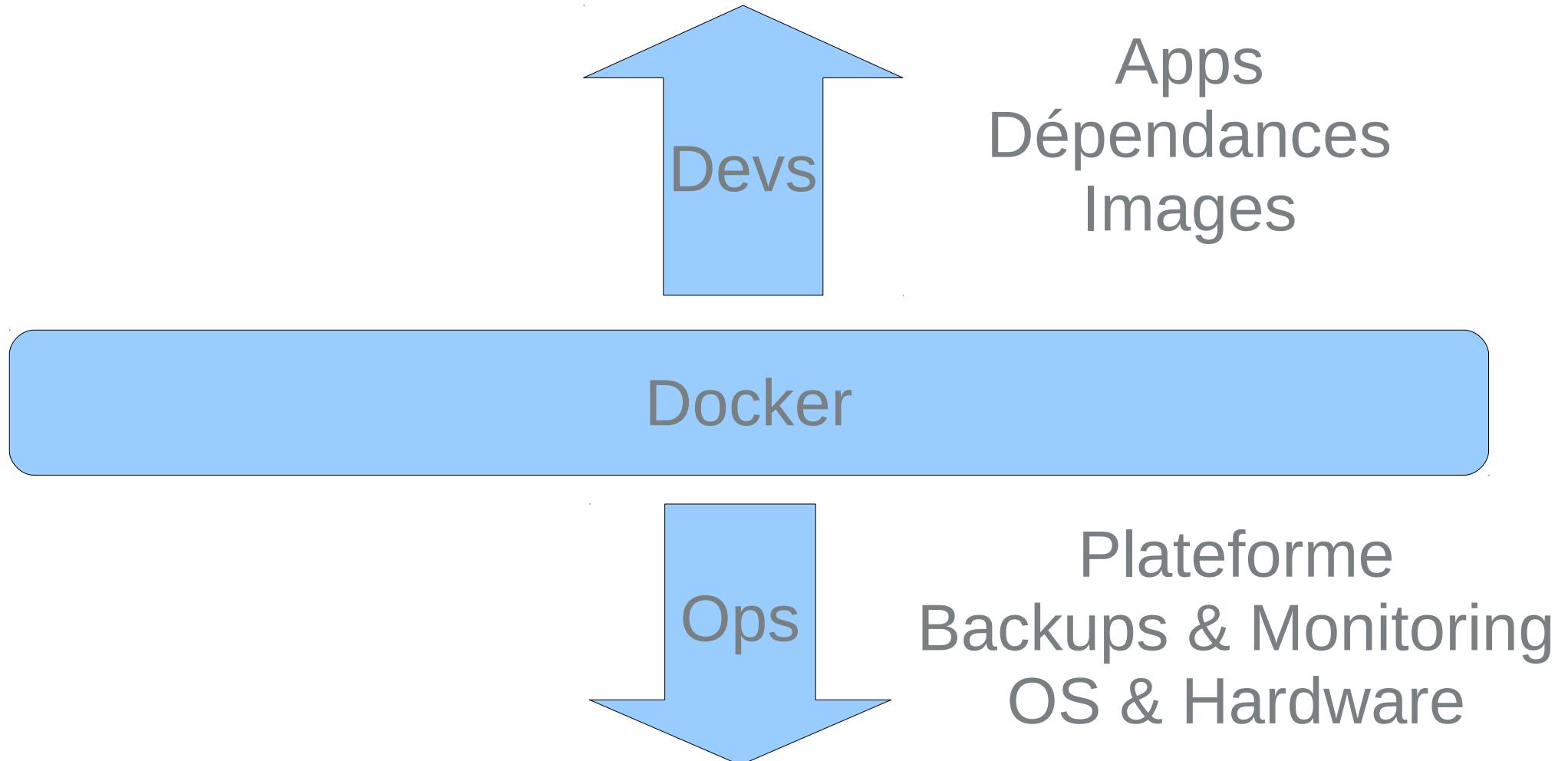
## Examples

### 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
```



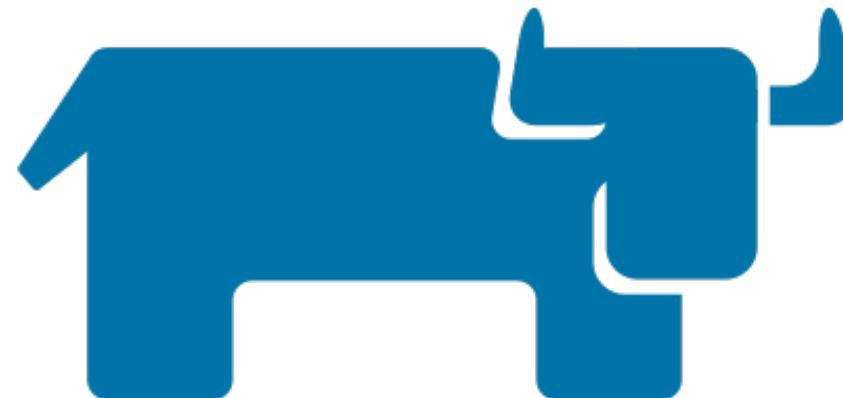
# Une interface très claire entre Devs et Ops



**Avec Docker,  
nous utilisons également ...**



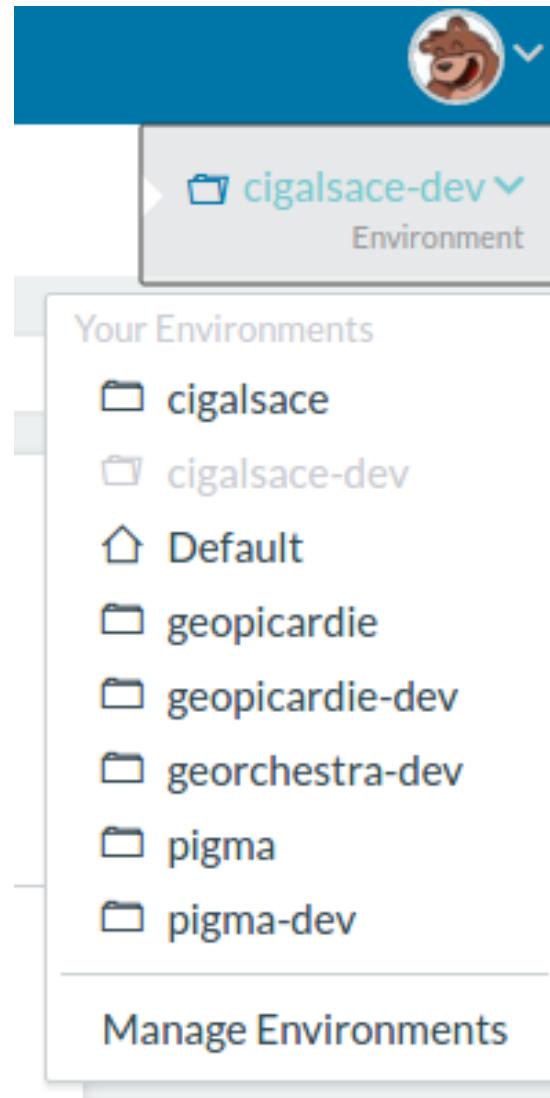
Une plateforme de gestion de containers ...



# RANCHER



# Rancher permet de gérer différents environnements



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

The screenshot shows the OpenShift web interface. The top navigation bar includes icons for Applications, Catalog, Infrastructure, API, Help, Hosts, Containers, Storage Pools, Certificates, and Registries. The 'HOSTS' icon is highlighted. Below the navigation is a sub-menu with 'HOSTS' selected. The main content area is titled 'Hosts' with a 'Add Host' button. It displays a table of hosts under the 'ACTIVE' tab. One host, 'cigalsace-dev', is listed with details: IP 167.114.250.156, port 1.10.3, OS Ubuntu 14.04.1 LTS (with KVM), CPU 2x2.39 GHz, memory 28.8 GiB, storage 197 GiB, and provider openstack. A note 'ldap.server=true' is shown below the host details. Two stacks are listed: 'Stack: db' containing one node 'db\_1' at 10.42.37.7, and 'Stack: georchestra' containing three nodes: 'geowebcache\_1' at 10.42.102.101, 'geoserver\_1' at 10.42.160.158, and 'header\_1' at 10.42.128.4, with a URL www.campatocamp.com /.

Stack: db	IP
db_1	10.42.37.7

Stack: georchestra	IP
geowebcache_1	10.42.102.101
geoserver_1	10.42.160.158
header_1	10.42.128.4



# Rancher propose un catalogue de « stacks »



Elasticsearch

Elasticsearch, you know for search!

[View Details](#)



Elasticsearch 2.x

Elasticsearch, you know for search!

[View Details](#)



Etcd

A highly-available key value store

[View Details](#)



F5 BIG-IP Balancer

Rancher External LB service powered by F5 BIG-IP

[View Details](#)



geOrchestra

geOrchestra Spatial Data Infrastructure

[View Details](#)



geOrchestra CMS

geOrchestra Content Management System

[View Details](#)



geOrchestra OpenLDAP

geOrchestra OpenLDAP service

[View Details](#)



geOrchestra Postgis

geOrchestra Postgis for geoserver

[View Details](#)



geOrchestra Pydio

geOrchestra File Sharing tool

[View Details](#)





APPLICATIONS

CATALOG

INFRASTRUCTURE

API

HELP



# ... 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	



## 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	
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 ...

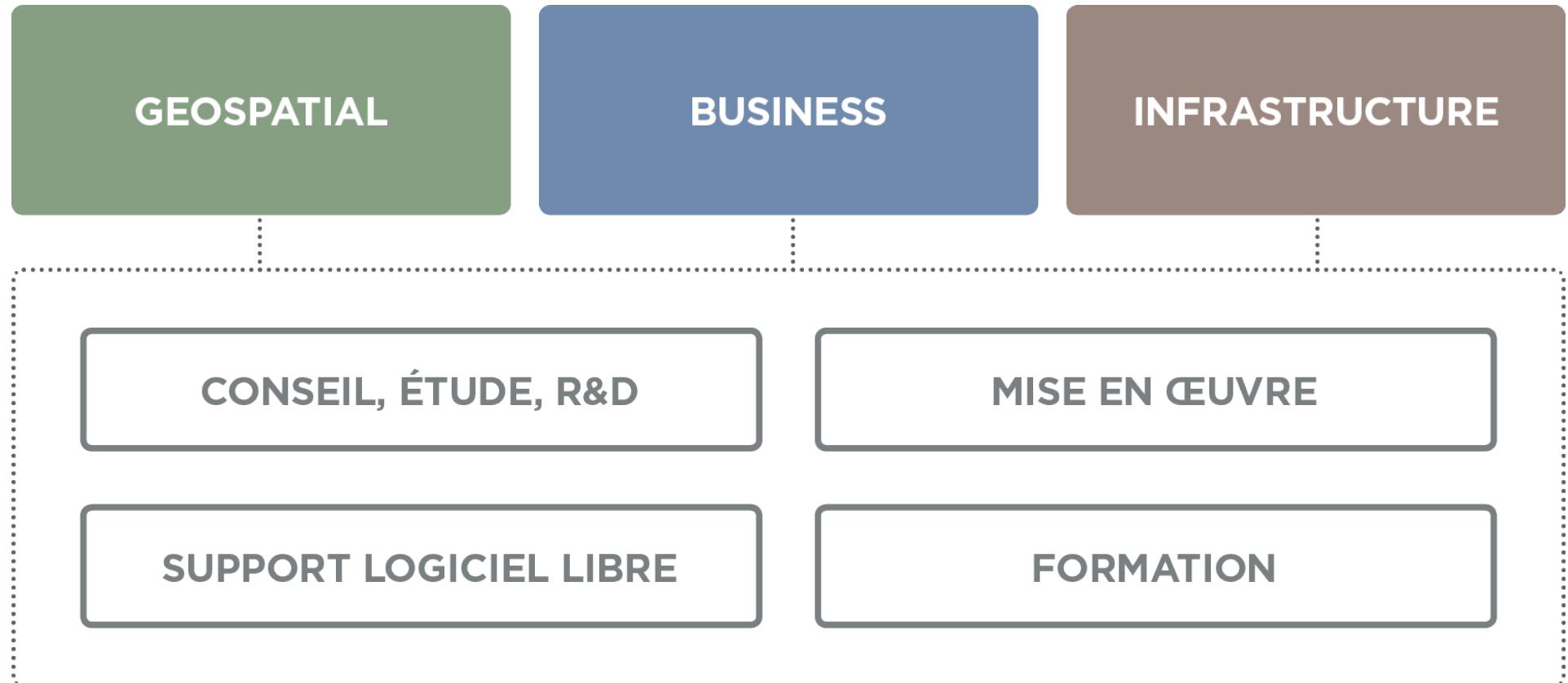
The End

# 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

