

# Final Wrap-Up

Daniele Spiga

HPC4L - Training. Beirut, Lebanon

21th22th October 2020

# Summary of the training

During these two days we discussed how to programme the cloud

- We saw the main pillars based on open source tools and services

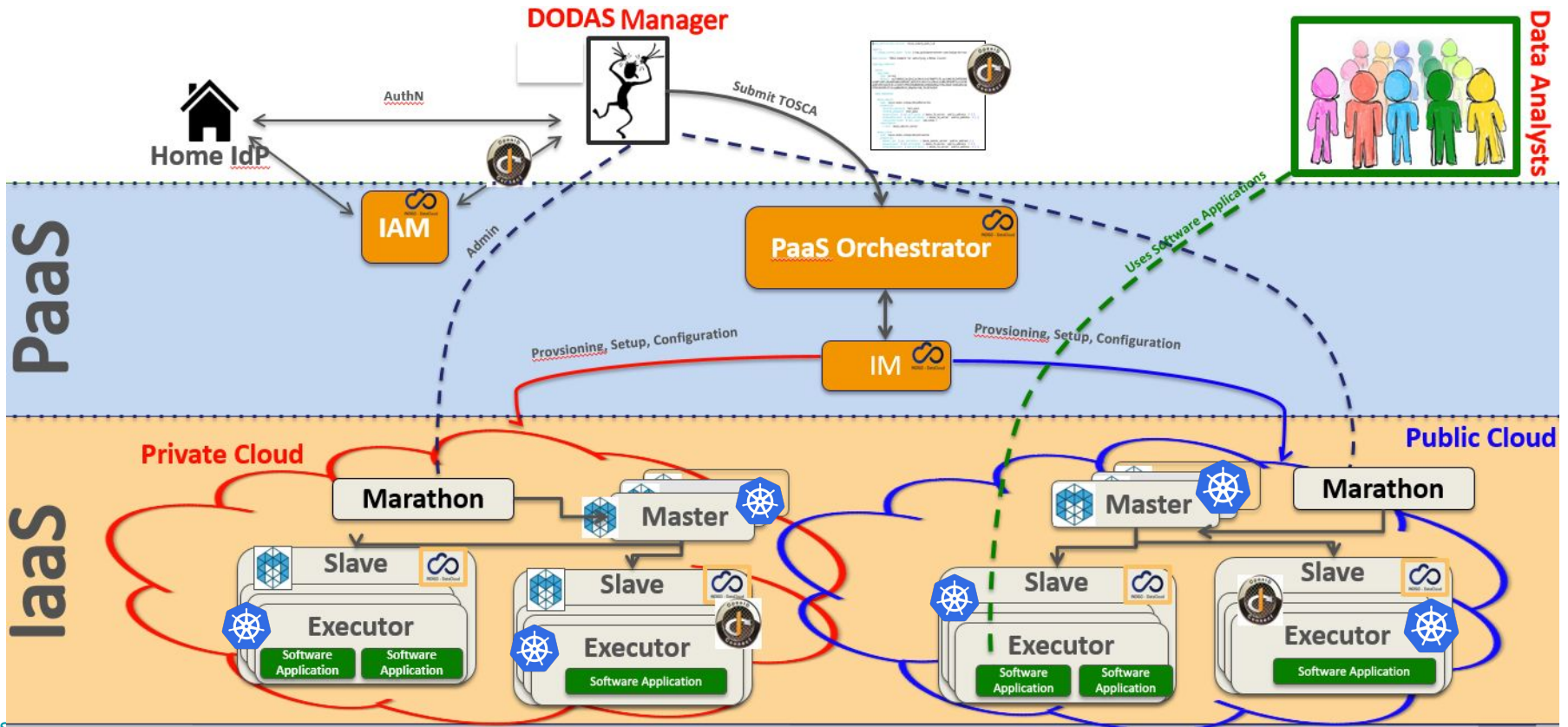
The focus has been then put on DODAS ( Dynamic on Demand Analysis Service )

- A Open source solution developed by INFN
- Currently a Thematic Service of the EU H2020 Project: **EOSC-hub**

We discussed then how to use DODAS to generate computing infrastructures on demand over any Cloud

- A generic HTCondor batch system on demand

# DODAS workflow

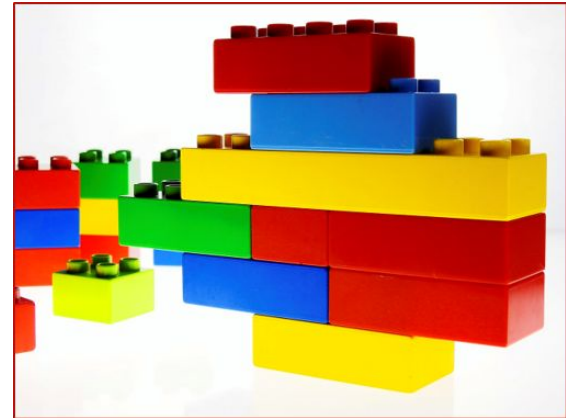


# The vision

There is a huge set of tools and solutions available, but there is NOT a one-size-fit-all solution

Open, Standard-based, flexible and extensible building blocks

Each use case can compose and customize  
and customize



# Deployment strategy

## TOSCA

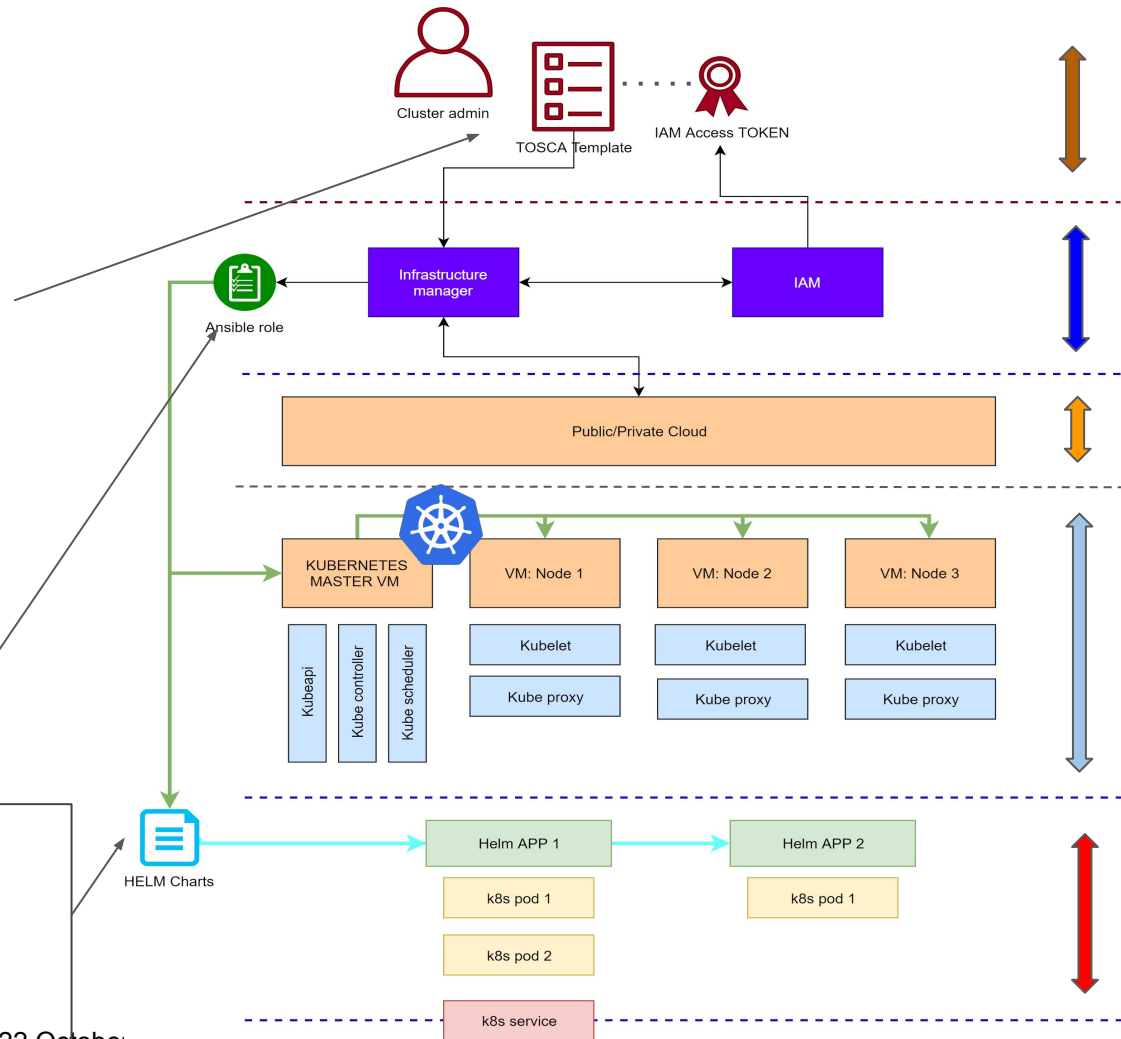
- Define the infrastructure (the HW)
- Define services (k8s) & Applications to setup (through Ansible)
- Declare (“any”) input parameters

## Ansible based installation using:

- Kubeadm (initialization)
- Flannel (default but others available)
- nginx ingress (optional)
- k8s dashboard (optional)

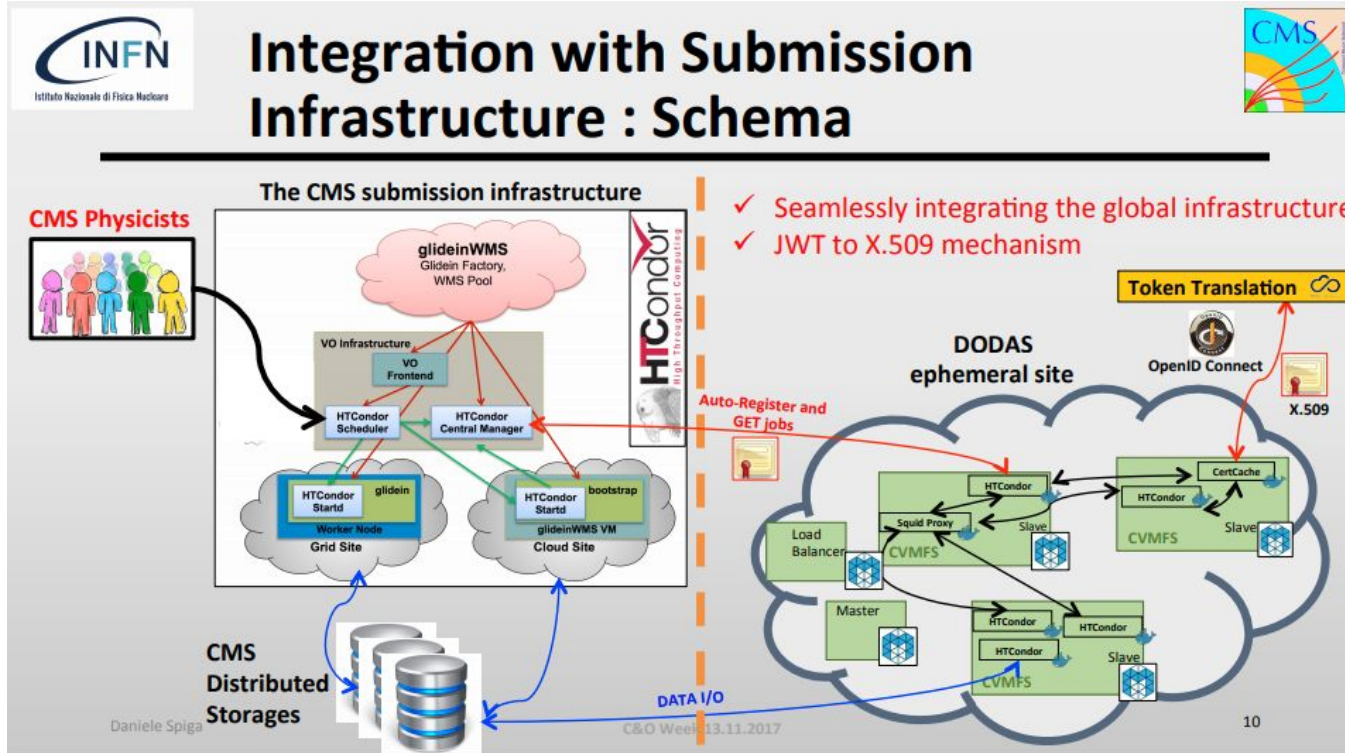
## Helm (Applications layer)

- Configure at runtime. Dynamically load and compile values (from TOSCA through ansible)
- Install applications



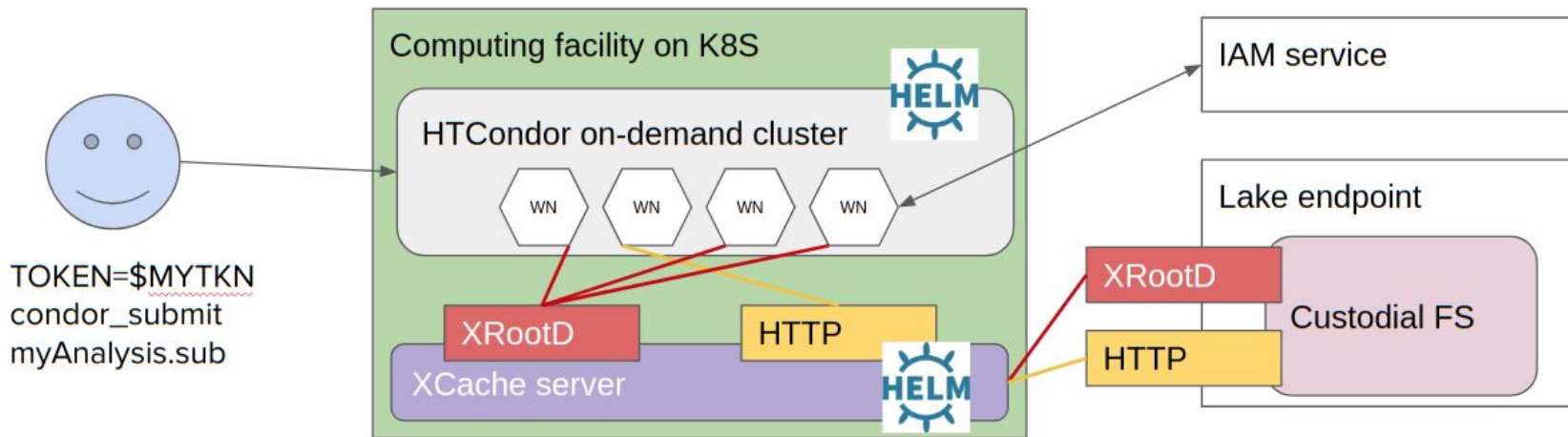
Then we entered the CMS specific integration with  
DODAS

# CMS TierX on demand generation with DODAS



# DODAS and future infrastructure at CMS/WLCG

## Data-lake integration



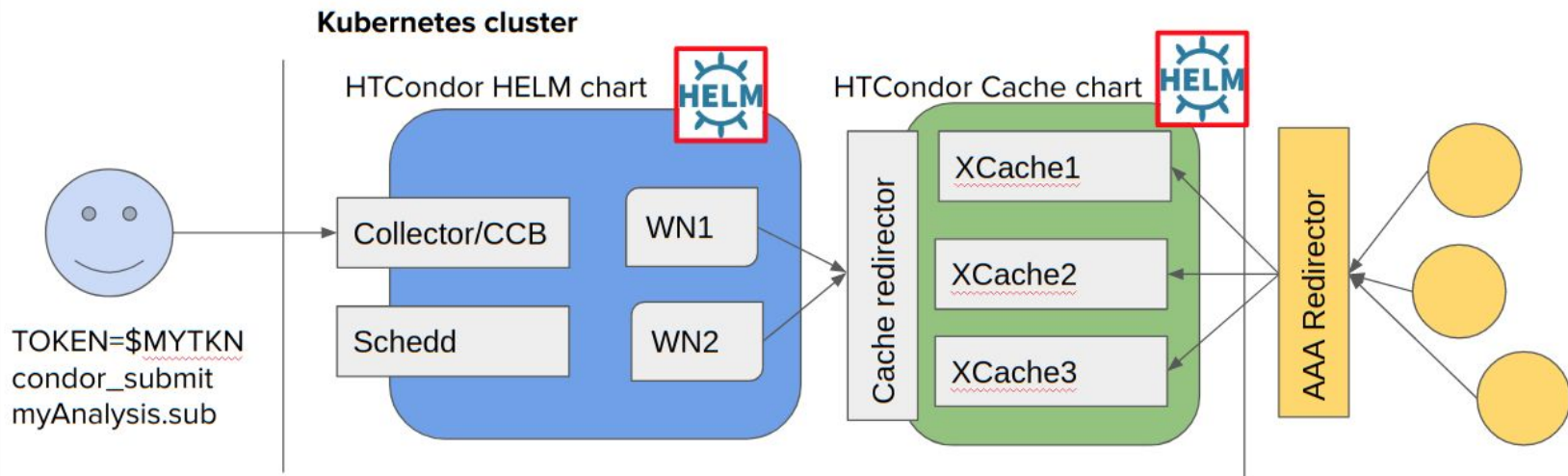


# Analysis Facility @ CMS with DODAS

## K8s based facility @CMS: the early tests



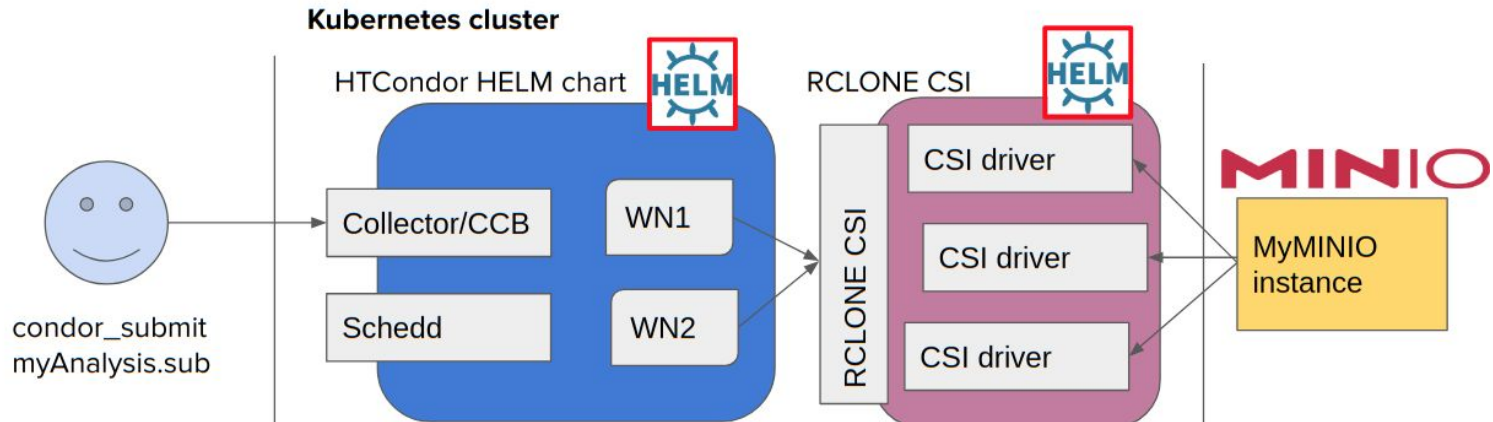
- We used this setup for a **demonstration over NanoAOD data in CMS**
- Planning for a **stable integration with real analysis @ INFN-CNAF “ProtoLake”**



# Beyond CMS...

## Beyond CMS...

- A similar approach has been extended also to a FERMI-LAT experiment use case
  - No XRootD involved
  - **Posix through RClone (with caching on VFS) has been tested exposing buckets of our Object Storage (MINIO)**
- From K8s perspective we used a CSI produced to provide PersistentVolumes based on RClone
  - Very flexible approach to support a lot of backends that are compatible with it



# Considerations and Conclusions

Anything we discussed these days ( from CMS and DODAS perspectives ) are willing to get

- Ideas
- Contributions
- Suggestions
- Feedbacks
- .....

So you are very welcome to let us know anything you might want to discuss.

My contact [spiga@infn.it](mailto:spiga@infn.it)

DODAS Documentation: <https://dodas-ts.github.io/dodas-apps/>