



ESCAPE

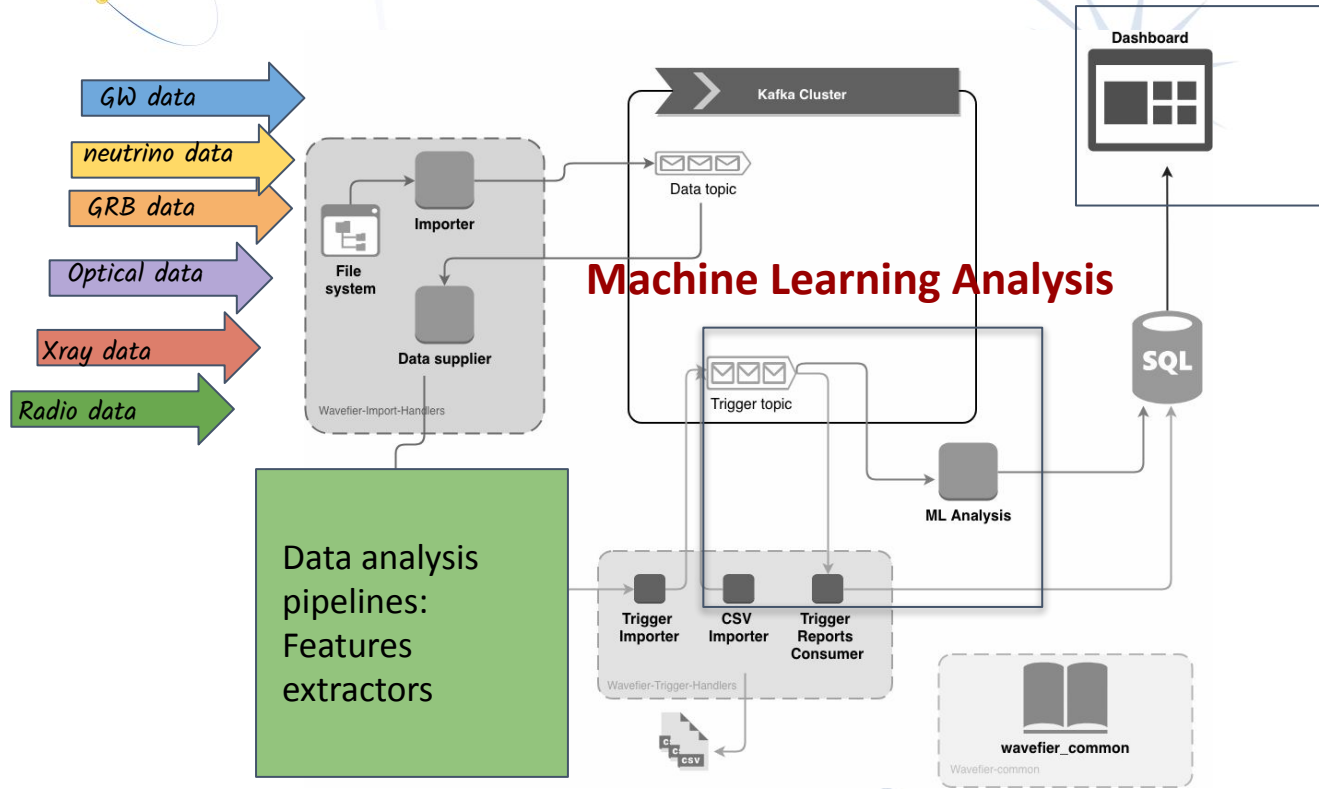
European Science Cluster of Astronomy &
Particle physics ESFRI research Infrastructures

Real time Multi Messenger Analysis and Machine Learning: ESCAPE Test Science Project

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MMA in ESCAPE framework



Results

Team

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...



A prototype for Real time analysis: Wavefier

Real time Gravitational Wave transient signal classifier

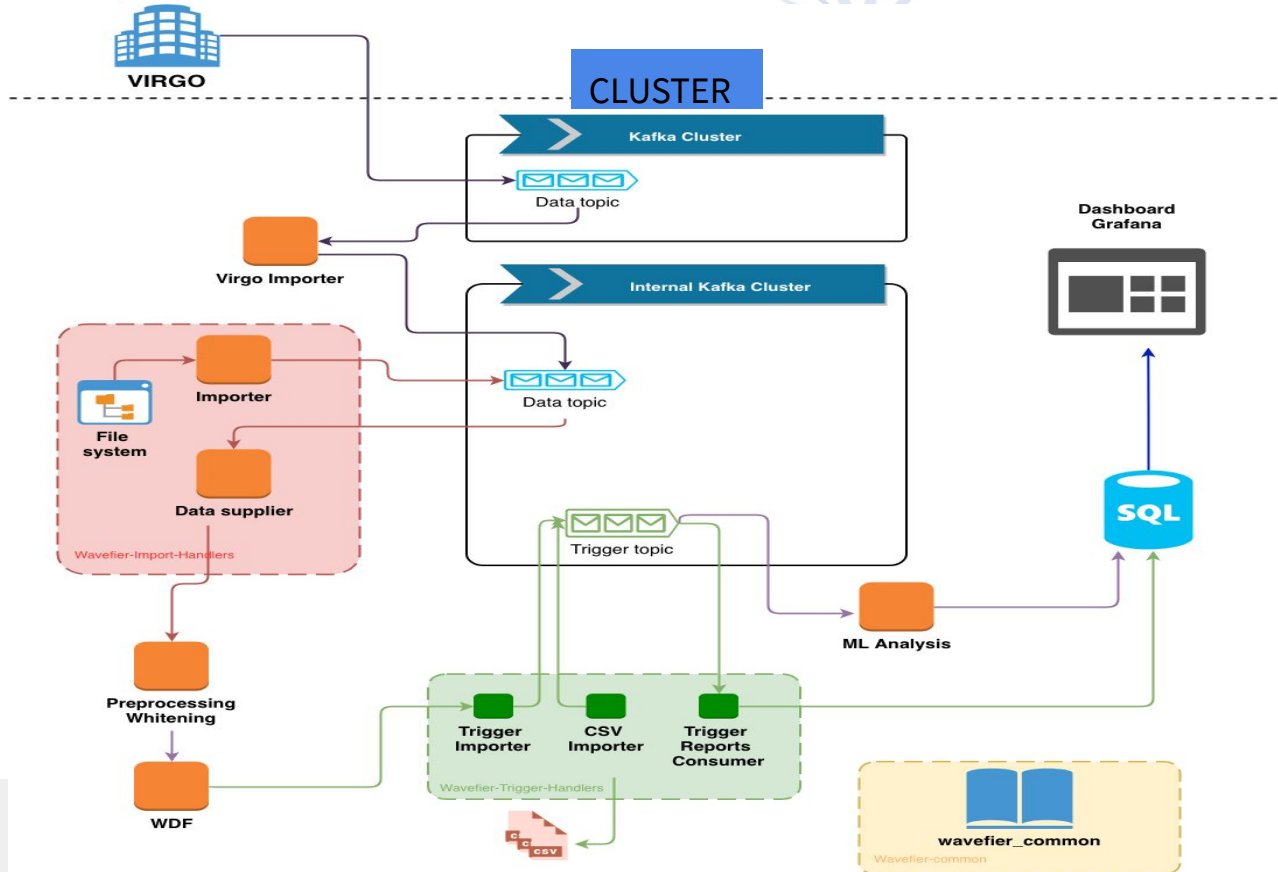
Key Objectives

- ⊙ *Setup a prototype for a **real time** pipeline for the detection of transient signals and their **automatic** classification*
- ⊙ *Best practice for **software management***
- ⊙ *Test different software architecture solutions to prototype a **scalable** pipeline for **big data** analysis in GW context.*
- ⊙ ***Interoperability** and access to data and services*
- ⊙ ***ICT services** supporting research infrastructures*
- ⊙ *Use of **data in network infrastructures** and services*

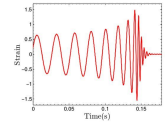
The screenshot shows a presentation slide with a dark blue background. At the top left is the Wavefier logo and the text 'Real time Gravitational Wave transient signal classifier'. Below this is the title 'Wavefier: a prototype for a real time transient signal classifier'. The slide features several logos: CLAPP (Laboratoire d'Énergie de Physique des Particules), CNRS (Les deux infinis), EGO (European Gravitational Observatory), and Trust-IT Services (Communicating ICT to markets). At the bottom, there is a logo for the H2020-Astronomy ESFRI and Research Infrastructure Cluster (Grant Agreement number: 653477) and the Asterics project logo (Astronomy ESFRI & Research Infrastructures Cluster). The text at the bottom reads: 'H2020-ASTERICS project brings together for the first time scientists and communities from astronomy, astrophysics, particle astrophysics & big data. <http://www.asterics2020.eu>'



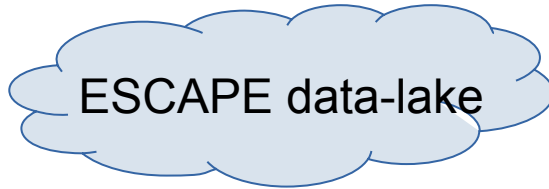
Wavefier/online Architecture



Wavefier Online / Offline Architecture

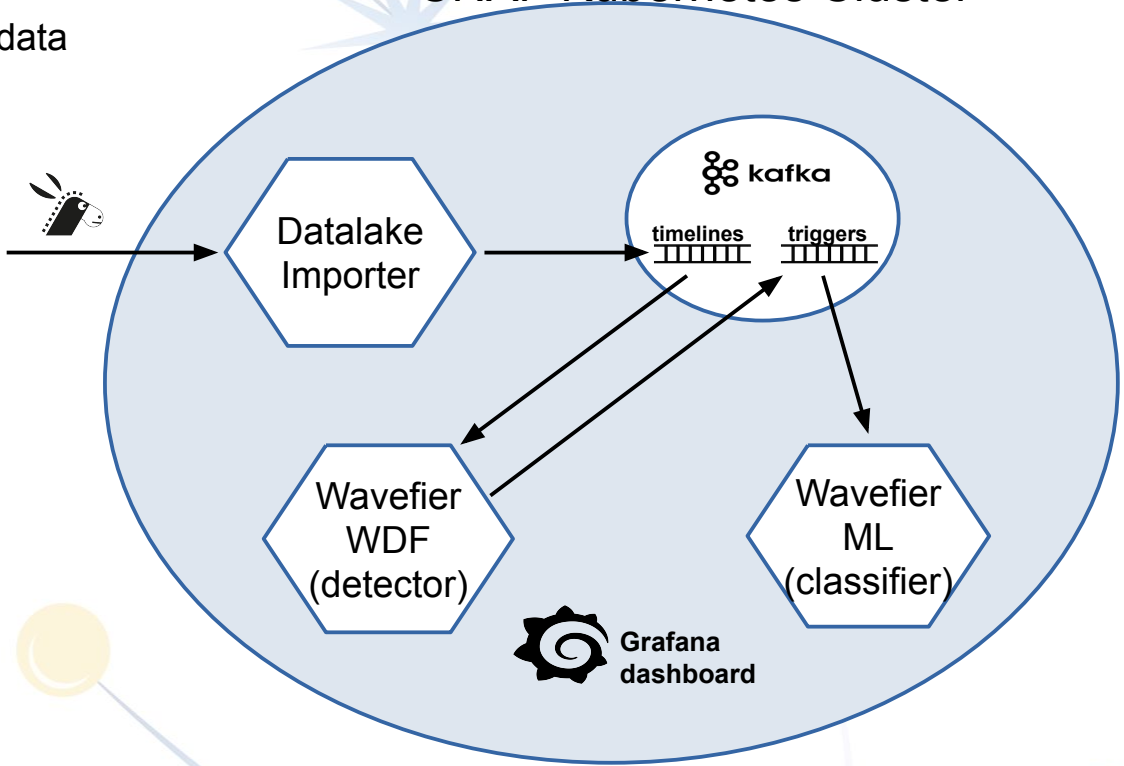


EGO server
Streaming public data
in real-time



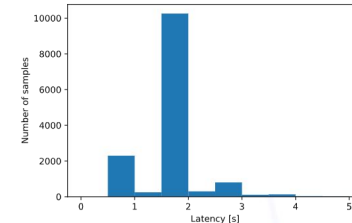
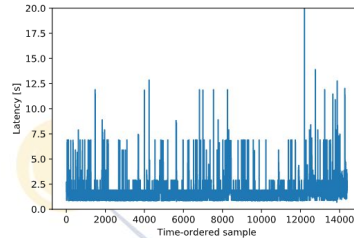
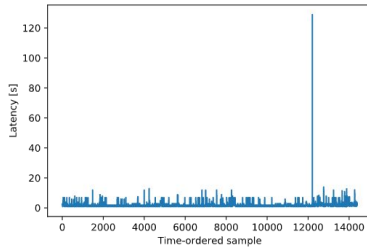
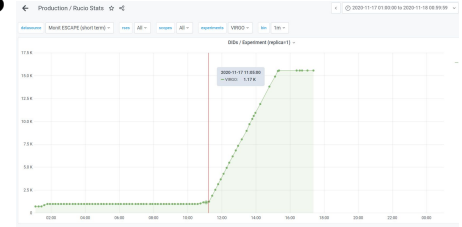
Other potential
real-time or offline
pipelines

CNAF Kubernetes Cluster

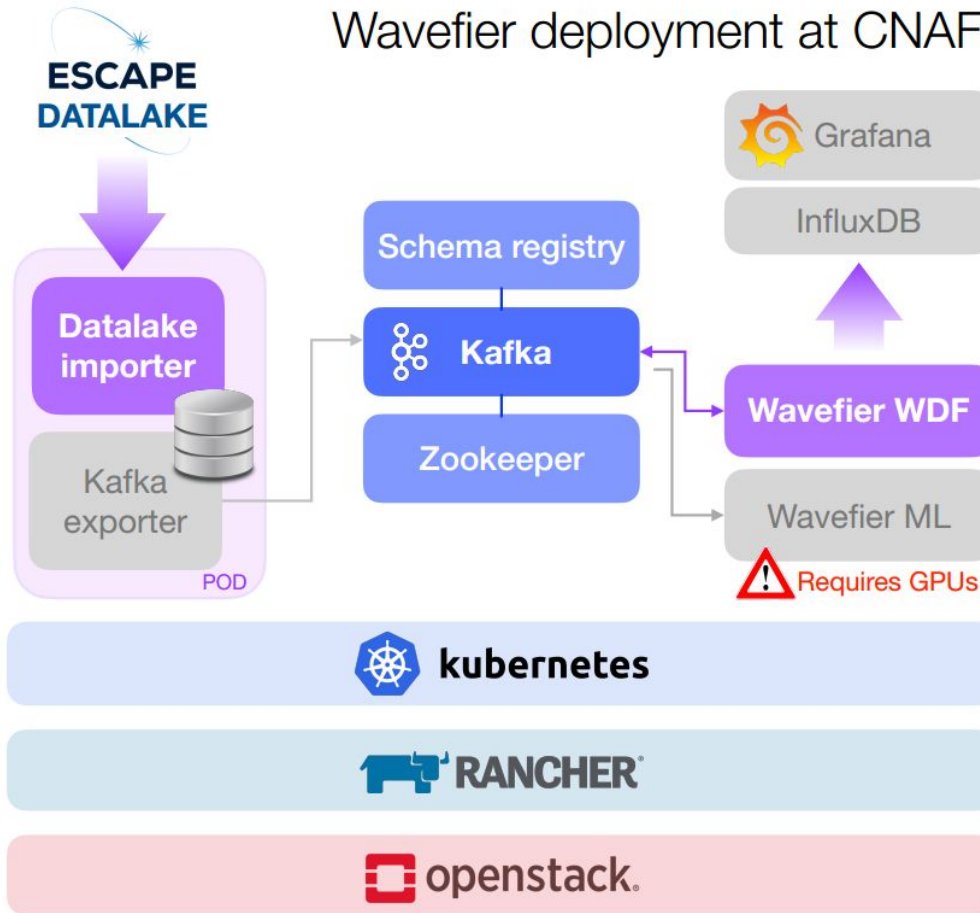


Data injection Dress rehearsal

- On the 17th of November, ESFRIs involved in ESCAPE have battle-tested the ESCAPE data-lake prototype by testing real use cases
- EGO has tested the injection of 4h real-time data (1s data chunks) into the data-lake and the download in a data center (CNAF)
- 4 x 3600 = 14400 data chunks have been sent. 100 % upload, 100 % download, 0 % corruption
- Latency analysis in progress (mean for upload : $1.9s_{-0.5}^{+0.3}$ s)



Wavefier deployment at CNAF



Helm charts to integrate with **GitLab CI/CD** pipelines.

VIRGO cluster
(just R&D for now)

Kubernetes clusters on demand

Cloud @ CNAF

