Update on Wavefier

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Wavefier - last update

https://indico.in2p3.fr/event/25432/

Wavefier 2.0 status

- Restarted Version 1 on local machines
- Software updated https://gitlab.com/wavefier2021
- Installation at CNAF Cloud kubernets cluster
- Need to integrate Wavefier with updated ML workflow on cluster with GPU
- Work ongoing for participation to the online Virgo O3 data replay challenge
- **Interaction with WP2 group for participation to the ESCAPE data analysis challenge (DAC2021)**

Multi-messenger wavefier status

- First set of multi-messenger data produced and used for a proof of concept study (Cuoco, Patricelli et al. 2021)
- **Interaction with gamma-ray and neutrino experiments to get other sets of real/simulated data**
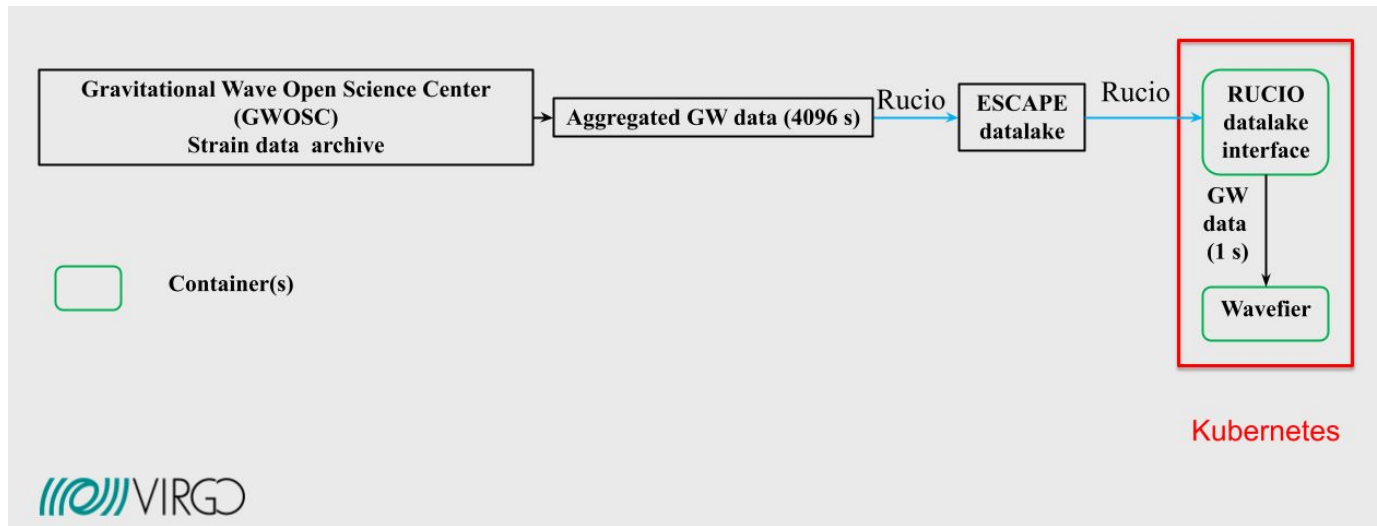
Since then:

- **participation to the DAC2021**
- **Agreements for multi-messenger data/pipelines**

DAC2021: our goal was to deploy **Wavefier** into the CNAF Kubernetes cluster and have it processing data from the datalake

We prepared the required docker to inject and read data in the ESCAPE data lake framework:

A docker container was created to download GW data from the datalake (made available on the OSSR; https://doi.org/10.5281/zenodo.5742053), to process the data into 1-second files and stream the data to Wavefier
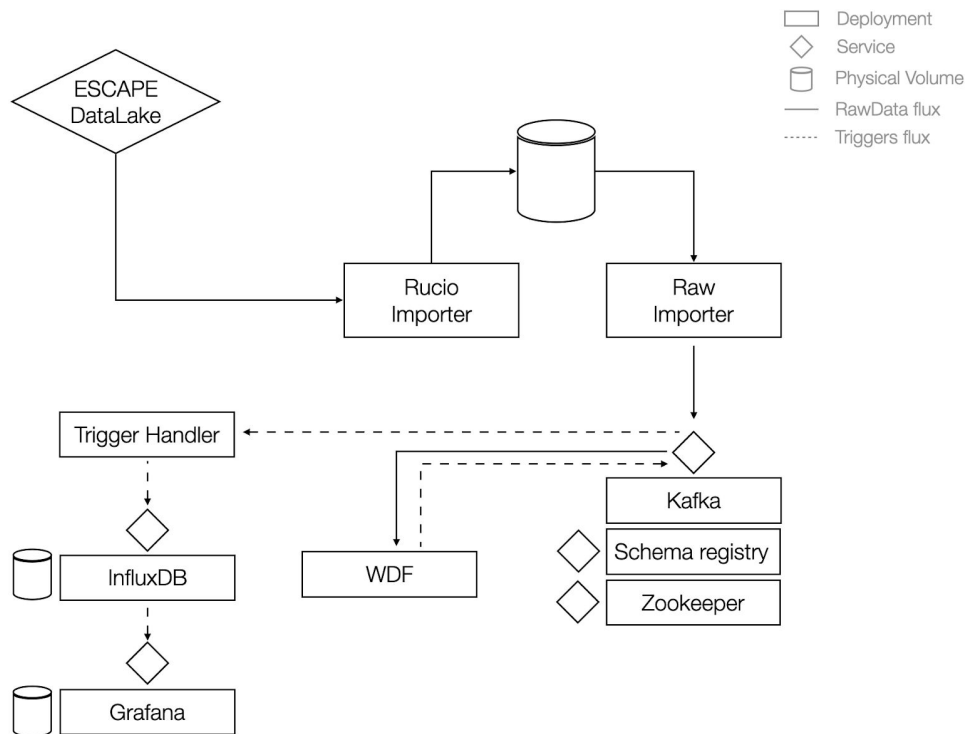

Credits: R. Poulton

DAC2021: our goal was to deploy **Wavefier** into the CNAF Kubernetes cluster and have it processing data from the datalake

We updated Wavefier; updated software at: https://gitlab.com/wavefier

All Wavefier components were installed as Kubernetes deployments; the Kubernetes deployment code can currently be found at https://gitlab.com/svallero/kubernetes/-/tree/helm

DAC2021: our goal was to deploy **Wavefier** into the CNAF Kubernetes cluster and have it processing data from the datalake

It was a success!
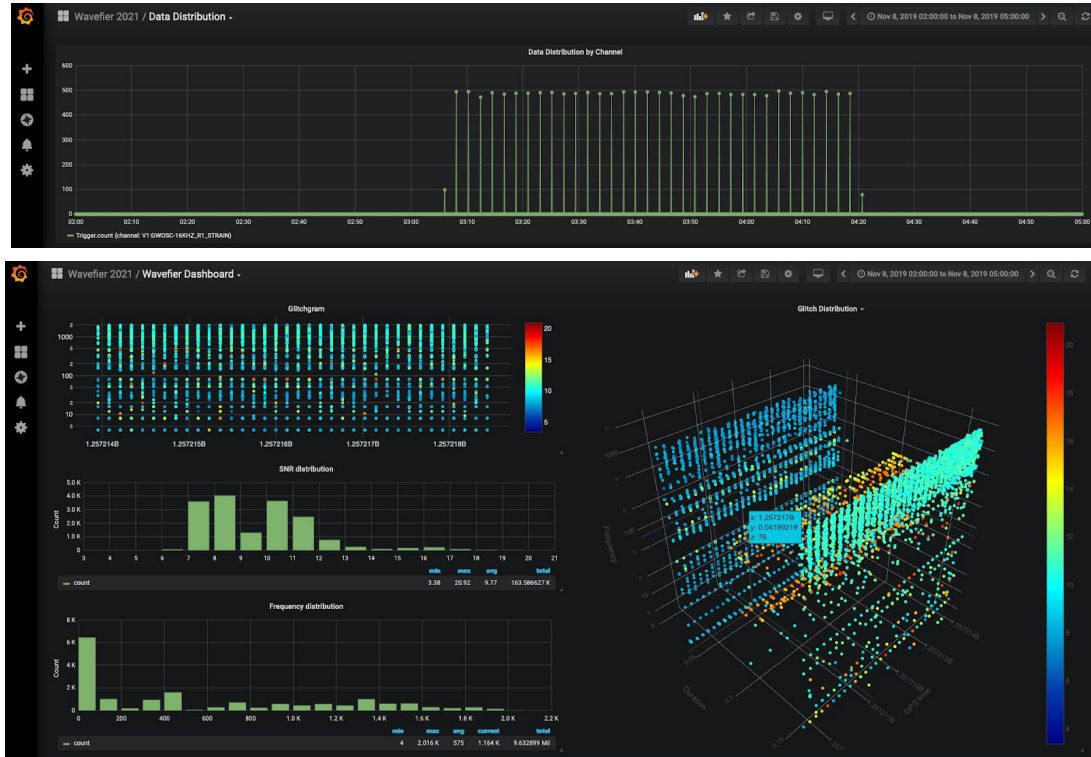
Example of Wavefier dashboard running at CNAF center

Image credit: S. Vallero

Multi-messenger Wavefier: update

A document ("New approaches for multi-messenger real time analysis") has been prepared and sent to members of the CTA and KM3NeT collaboration:

- description of the project
- expected analysis workflow
- requirements

❏ Feedback received from **CTA**

- Meeting with Roberta Zanin (CTA project scientist)
- Preliminary agreement on the "official" set of simulated data to be produced;
- Man power: strong interaction with the GW-CTA team, plus other people willing to help
- Waiting for the formal approval of the project by the CTA Physics coordinators
- Timeline to get the data: 2-3 months (after the approval)

❏ Positive response from **KM3NeT** collaboration

Backup

Multi-messenger Wavefier
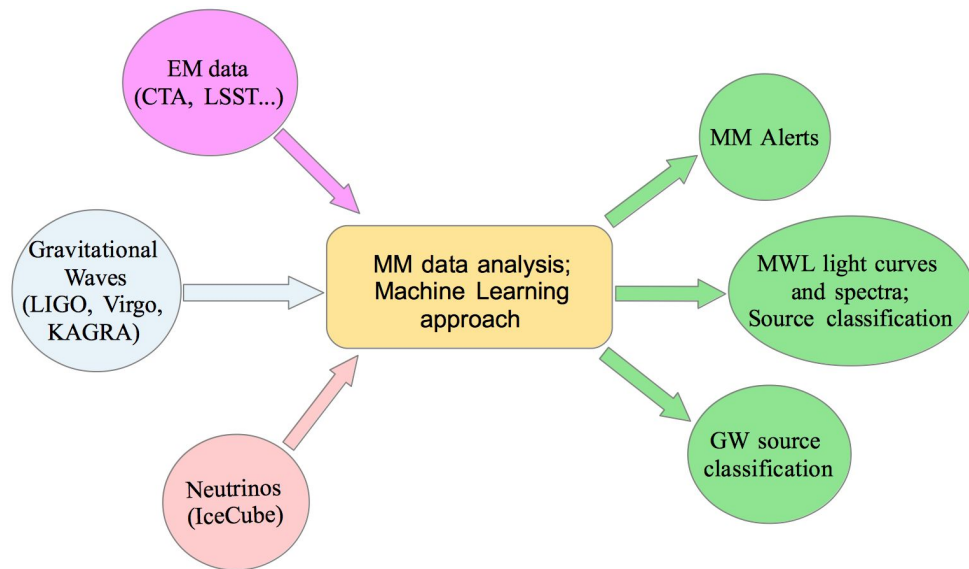
- MM analysis: extension of Wavefier to other messengers (photons, neutrinos)
- A large set of data (both simulated and real) is needed for testing purpose
- The dataset (MM simulator) so far:
  - GW data from LIGO, Virgo, KAGRA, ET (hdf5 files)
  - Fermi-LAT light curves (fits files)

- What's missing:
  - "Official" EM (CTA) and neutrino (KM3NeT) data and expert people