



# KM3NeT Tier-2 Computing in Tbilisi State University



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on behalf of the KM3NeT collaboration

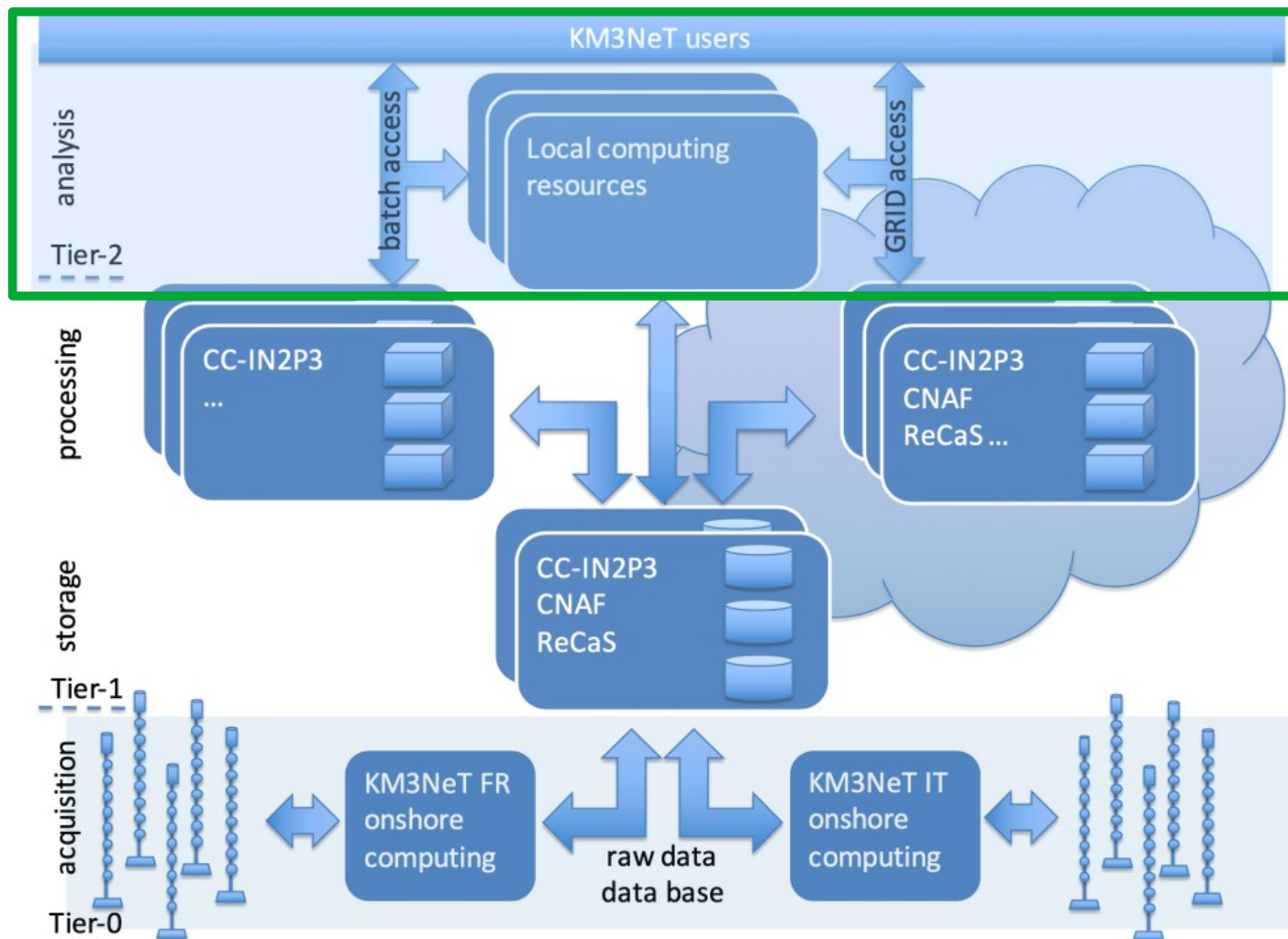


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\*Tbilisi State University

# KM3NeT Dataflow and Computing Model



Tier-2 (local) computing:

The large computing clusters.

Examples:

- Netherlands (Nikhef)
- Poland (NCBJ)

Or a small, university computing center:

Tier-2 TSU unit:

Dell PowerEdge T40

- Intel Xeon E-186G 3.8GHz 6 core
- 12MB cache memory
- 32GB RAM
- 10 TB hard disk

Jannik Hofestädt on behalf of the KM3NeT Collaboration, EPJ Web of Conferences 207, 08001 (2019)  
Computing in the KM3NeT Research Infrastructure

## Why KM3NeT Tier-2 (local) computing?

- Local access to the KM3NeT data and software for Georgian KM3NeT groups (Tbilisi State University and The University of Georgia) including students.
- Large KM3NeT Tier-1 resources are shared by many collaborators. Tier-2 centers help to reduce the peak usages and computing traffics.
- Innovative workflows and computing methods (machine and deep learning) developed in the ESFRI projects are disseminated at the university level

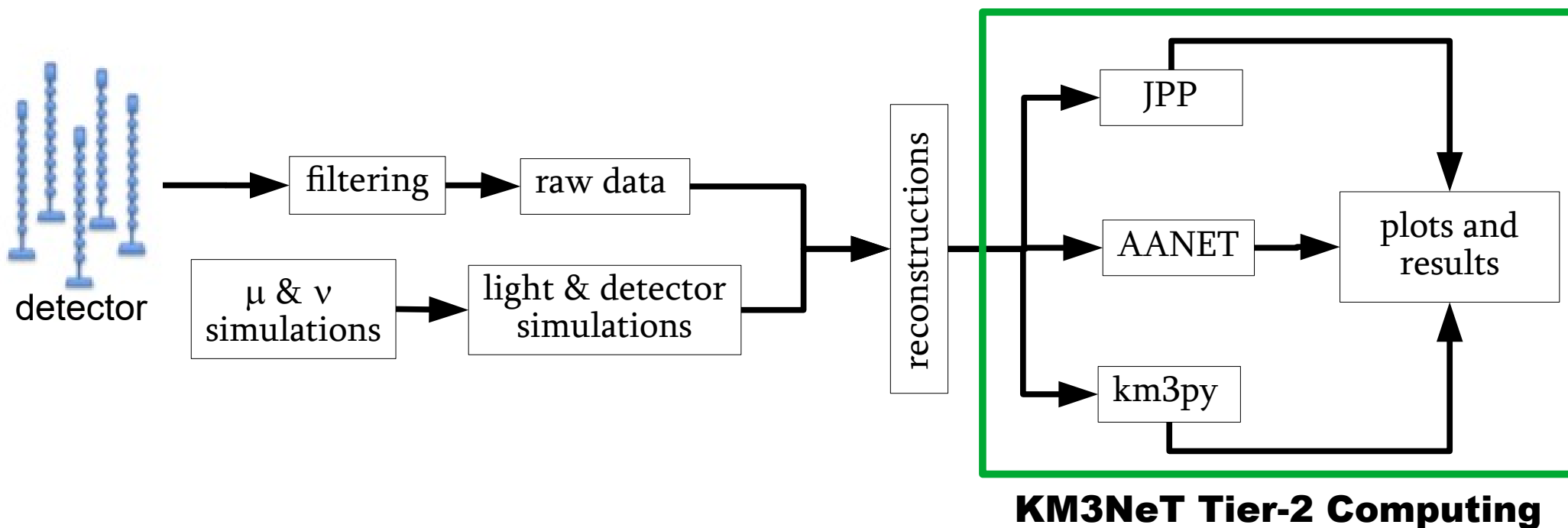
The development of the KM3NeT Tier-2 computing at TSU is partially supported by several grants:

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- Scholarship from the World Federation of Scientists

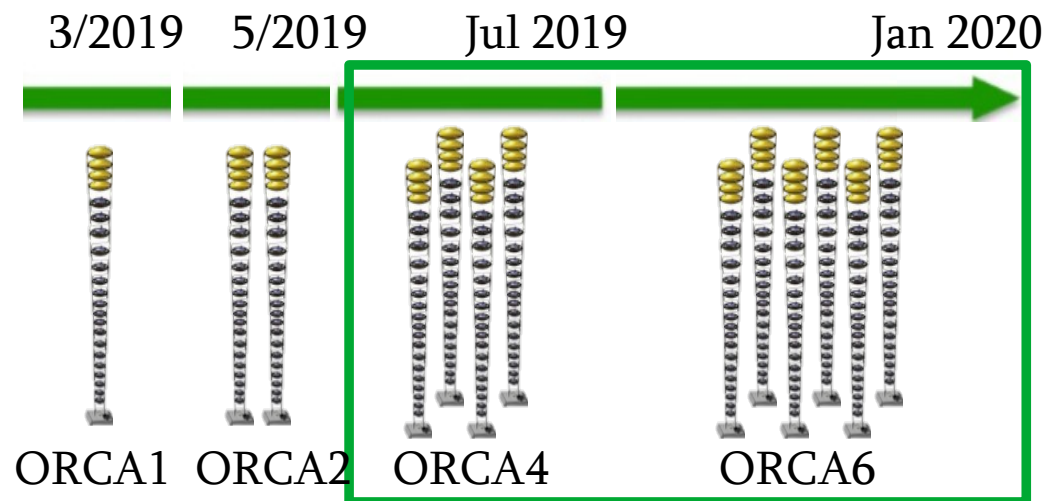
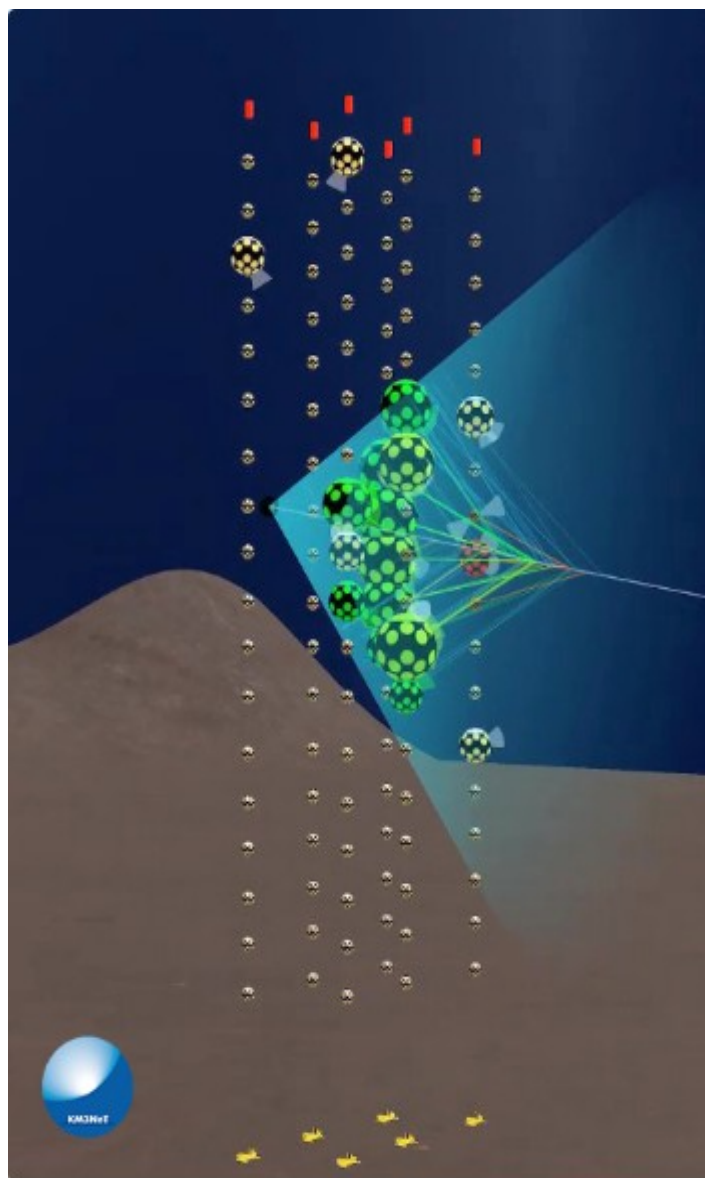
# Dataflow and Software at KM3NeT Tier-2 TSU

## KM3NeT software frameworks:

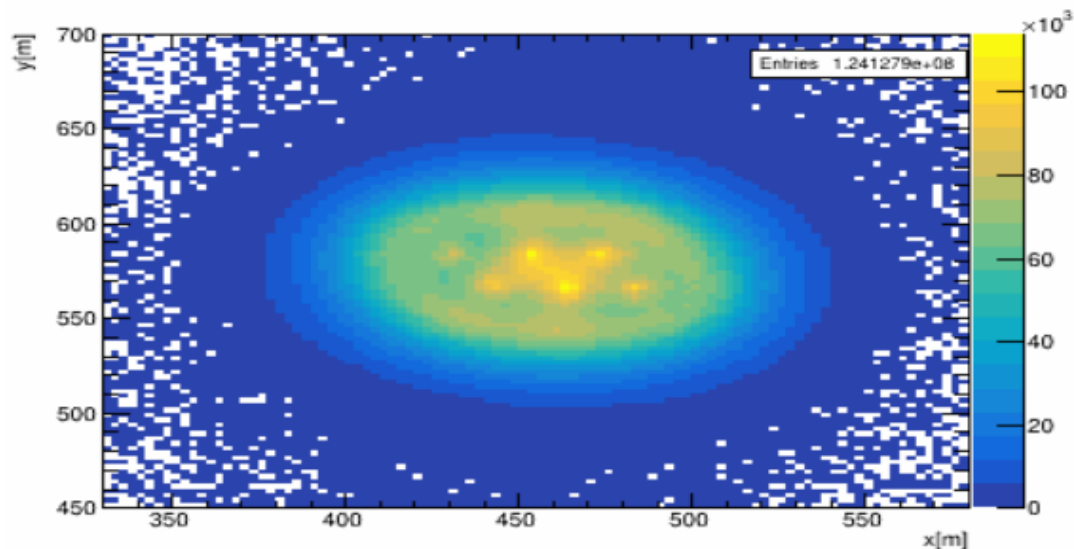
- JPP – software framework for DAQ; detector monitoring; calibration; event triggering; simulations; reconstructions
- Km3py – python applications and classes for the data IO, monitoring, analysis
- Aanet – analysis tools



# KM3NeT/ORCA Data at TSU



ORCA4	147.5 days	$1.2 \times 10^8$ events	$\sim 0.7$ TB
ORCA6	327.4 days	$2.5 \times 10^8$ events	$\sim 1.7$ TB



# Summary and Outlook

- KM3NeT Tier-2 computing at TSU is working since 2019.
- KM3NeT software frameworks (Jpp, km3py and Aanet) are available at TSU as well as processed KM3NeT/ORCA data and MC.
- Currently KM3NeT TSU group is working on the analysis of ORCA6 data.
- Optimization of analysis by study of performance of different KM3NeT frameworks is ongoing. In the near future machine and deep learning techniques will be implemented.
- Collaboration with GRENA (Georgian Research and Educational Networking Association) will provide additional resources for the local KM3NeT Tier-2 computing.