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# Data handling in the ALICE O2 event processing

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The ALICE experiment at the Large Hadron Collider (LHC) at CERN is planned to be operated in a continuous data-taking mode in Run 3.This will allow to inspect data from all collisions at a rate of 50 kHz for Pb-Pb, giving access to rare physics signals embedded into a large background.

Based on experience with real-time reconstruction of particle trajectories and event properties in the ALICE High Level Trigger, the ALICE O2 facility is currently designed and developed to support processing of a continuous, trigger-less stream of data segmented into so-called time frames.

ALICE O2 uses the ALFA software framework and message queue communication to distribute workload among many processes running on multiple compute nodes. After aggregation of all data forming a time frame on an Event Processing Node (EPN), algorithms can efficiently navigate through large data sets and add new data to the data stream. Both data format and software framework have been designed with emphasis on lightweight data organization and optimized in-memory data format, supporting an efficient pipelined data processing.

In this contribution, the organization of data reconstruction in the O2 event processing together with prototype studies for detector reconstruction and performance measurements will be presented.

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