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The Trigger and Data Acquisition System for the KM3NeT-Italia towers

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KM3NeT-Italia is an INFN project supported with Italian PON fundings for building the core of the Italian node of the KM3NeT neutrino telescope.

The detector, made of 700 10" optical modules (OMs) lodged along 8 vertical structures called towers, will be deployed starting from fall 2015 at the KM3NeT-It site, about 100 km off Capo Passero, Italy, 3500 m deep.

The all data to shore approach is used to reduce the complexity of the submarine detector, demanding for an on-line trigger integrated in the data acquisition system running in the shore station, called TriDAS. Due to the large optical background in the sea from ^{40}K decays and bioluminescence, the throughput from the underwater detector can range up to 30 Gbps. This puts strong constraints on the design and performances of the TriDAS and of the related network infrastructure.

In this contribution the technology behind the implementation of the TriDAS infrastructure is reviewed, focusing on the relationship between the various components and their performances. The modular design of the TriDAS, which allows for its scalability up to a larger detector than the 8-tower configuration is also discussed.

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