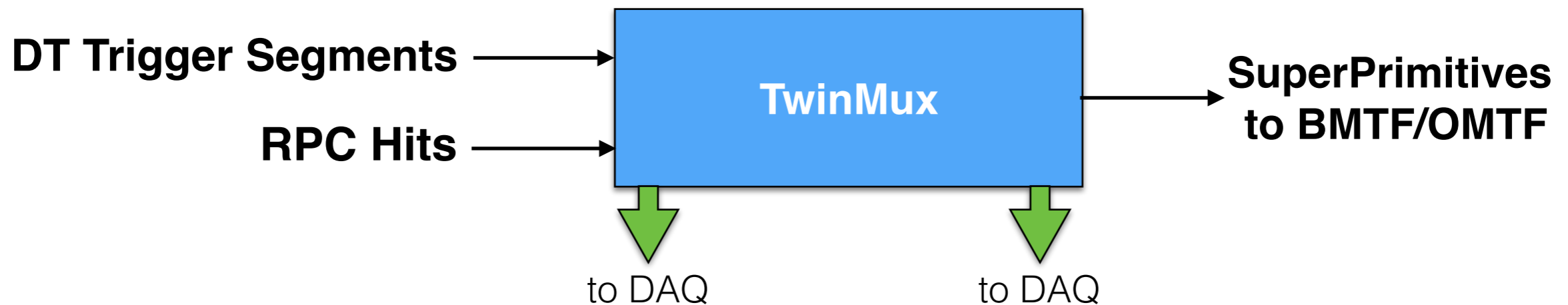


DT+RPC SuperPrimitive TwinMux algorithm in 2016



- Each TwinMux processor receives DT and RPC links from one sector of the barrel muon detector
- DT consists of Trigger Segments, including position, direction, quality and BX information
- RPC consists of Hits, including position and BX information
- Output data to the Barrel Muon Track Finder use the same data format as the DT Trigger Segments and are obtained with the following algorithm
 - Input data are deserialised and synchronised.
 - A clustering algorithm is applied to RPC Hits: neighbouring Hits are merged and the resulting cluster position is assigned with half-strip resolution and converted into DT coordinates.
 - In case the same RPC cluster fires in two consecutive BXs, the second one is suppressed.
 - RPC clusters close in ϕ to DT Trigger Segments from the same chamber are searched for, in a ± 1 BX time window centred around the DT Trigger Segment BX.
 - The closest RPC cluster is selected; if the $\Delta\phi$ with respect to the DT Trigger Segment satisfies $\Delta\phi \leq 15$ mrad, RPC and DT are considered matched and the SuperPrimitive quality bit is set.
 - If the DT Trigger Segment was built with less than 8 DT ϕ layers, the Trigger Segment BX is shifted to match the RPC cluster BX; if the DT Trigger Segment was built with all 8 DT ϕ layers, its BX is not changed.
 - If no match with an RPC cluster was found, the original DT Trigger Segment is output to the Barrel Muon Track Finder, and the SuperPrimitive quality bit is not set.