

Mezzanine style RTMs –a simple route towards your own custom MTCA.4 signal conditioning

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The MTCA.4 standard and its growing market provides the physics community with a high performance replacement for ageing standards such as VME. As highly performant, flexible and programmable FPGA based digital elements and variable data transfer methods are now readily available in the MTCA.4 standard, many institutions can focus their custom electronics developments more closely onto aspects that are truly specific to their experimental needs.

However, the threshold for starting a first MTCA.4 development is still significant as groups have to understand the standard and adhere to its stringent and sometimes complex demands and follow the rapid developments in the FPGA market.

To lower this threshold and to get started with our first MTCA.4 project the particle physics sub-department at the University of Oxford has decided to co-develop a pilot project together with VadaTech and Etalon AG. The project aims to realise a signal conditioning unit for high speed interferometric applications. It provides variable gain, bandwidth and coupling to single mode optical inputs in the 1550nm range in the form of an MTCA.4 rear transition module designed to work with VadaTech's AMC523 units.

To maximise the usefulness of our developments to other developers we use a mezzanine configuration in which the base unit of the RTM will be designed to accept a wide range of mezzanine boards. The mezzanine itself is entirely focussed on the signal conditioning functions and can be realised with very little prior knowledge of the MTCA.4 standard by adhering to the electrical and mechanical interface specifications with the associated base unit.

As the project is only 2 months old we will present the scientific and commercial motivation and applications of these boards, show initial specifications and the mezzanine Ansatz and explain why and how we expect this development approach to be expanded towards other applications at the department of Physics in Oxford.

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