

 03/07/2023

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| **Delay on:** | **MS9** |
| **Delivery Date in Annex 1:** | M36 |
| **Expected Delivery Date:** | M42 |

**Justification for delay**

Prototype timing layers based on the Timepix4 readout ASIC and corresponding SPIDR4 read-out system have been successfully produced, assembled, tested and commissioned at the CERN SPS testbeam facility. These timing layers deliver the anticipated sub-nanosecond time resolution across the entire 512x448 matrix of pixels, and at the maximum available beam rate of the SPS beam line (of order 1 Mtracks/s).

However, the sensor assemblies used in these prototype timing layers were borrowed from a different (non-AIDAinnova) project because of delays in the delivery of PiN type sensors and the flip-chipping of the sensor onto the Timepix4 ASICs. The use of borrowed sensors allowed us to evaluate and optimise the timing performance of the Timepix4 chip and the test the data acquisition system, thereby minimising the risks and delays.

The final sensors assemblies are expected to be delivered in M39 and, assuming sufficient yield, the timing layers can be installed in M42. The chip carrier boards, SPIDR4 readout have already been produced and tested and hence pose no risk of delay.

Preparations for the mechanical integration of the hardware into the telescopes and of the SPIDR4 readout into EUDAQ are ongoing and are expected to be ready in M42.