



AIDA²⁰²⁰

Advanced European Infrastructures
for Detectors at Accelerators

WP Testbeam and DAQ

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- WP 3.1 work package management
- WP 3.2 Existing telescope upgrade (EOI-21, 32 & 141)
 - 3.2.1 new sensors : We plan to use an already available or close to available sensor for the first round of telescope upgrades. It has to offer comparable performance to the MIMOSA26 sensors currently in use. A market survey will be the first milestone of this task

See Table on the next slide

If there is a suitable sensor developed in the CMOS WP, this could be used for a second upgrade stage.

- 3.2.2 Common cold box: (EOI-20)

A common cold box is strongly requested by various user groups, particularly with common interfaces, so it can be used at all telescope sites.



	MIMOSA26	ALPIDE	MIMOSIS (CBM)	MALTA
Process	AMS350	TowerJazz180	TowerJazz180	TowerJazz180
Sensor Size (cm)	2 x1 cm	3x1.5	3.1x1.35	1.8 x 1.8
Pixel Pitch (μm)	18x18	26.88 x 29.24	26.88 x 30.24	36.4x36.4
Resolution ($d/\sqrt{12}$)	5.2	7.8 x 8.4	7.8 x 8.7	10.5
Thickness (μm)	50	50	50	100 (50 possible)
Hit Time resolution	112.5 μs	5~10 μs	5 μs	< 10 ns
Readout time	112.5us per frame	Zero suppressed, By 1200Mb/s data link.	2 Gbit/s link	hit rates up to 10MHz/cm ²
Availability	Legacy	ALICE mass production	Q42020 for users	prototype

- WP 3.3 Sub-ns timing

To provide a $O(100)$ ps timing for particle hits, a dedicated timing layer as well as a TLU with ps timing support need to be developed, integrated and installed at CERN and DESY.

- 3.3.1 Timepix4 support:
- 3.3.2 Timing support in the TLU:

- WP 3.4 DAQ software for future test beams: (EOI-19, 21, 22, 23, making use of EOI 28 from computing)

The development and roll-out of EUDAQ2 was a great success in AIDA2020. The next generation of sensors for the telescopes and future test beam needs will require further enhancements of the software framework, e.g. multi-sensor operation, timing support and a more versatile online monitoring.

- EUDAQ2 support for ps timing and next generation sensors
- Versatile Online Monitoring for EUDAQ2

- WP 3.5 Common Hardware (EOI-15, 55, 98, 127), if funding permits.

- Common boards and associated software and documentation



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Potential Industrial partners

[ANS Industrial](#) (supplier)

[Amsterdam Scientific Instruments \(ASI\)](#)

[SRS Technology](#) (CERN spinoff)

[Picotech SAS](#)

[PETsys electronics](#)