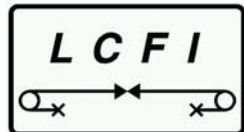


ISIS plans

Dr Helen Heath

Thanks to LCFI collaboration particularly, David Cussans, Scott Mandry and Jaap Velthuis



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LCFI

- Linear Collider Flavour Identification
- Investigation of technologies for vertex detection
 - CCD
 - ISIS
- ISIS testbeam as part of validation package of EUDET

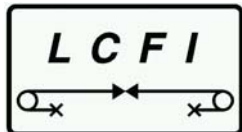
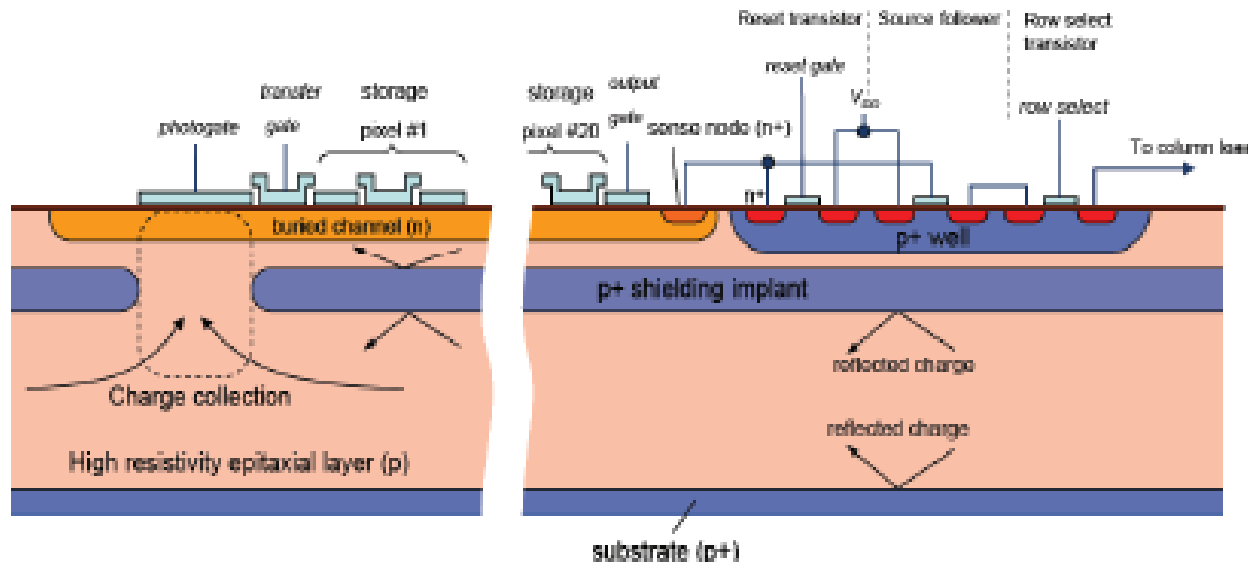


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ISIS

- In-situ Storage Image Sensor

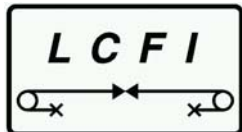


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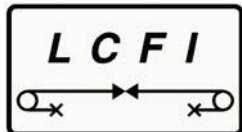
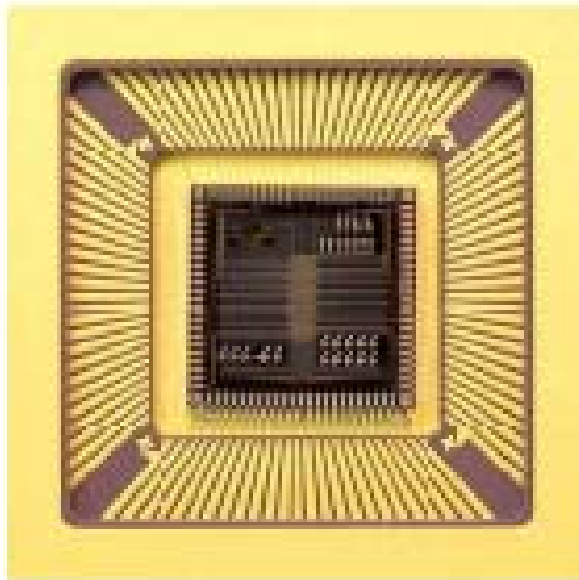
ISIS principle

- Signal is stored in pixel during the bunch train.
 - Charge to voltage conversion outside the bunch train – reduce sensitivity to EMI
- 20kHz storage during bunch train
- Readout at 1MHz



“Proof of Principle ISIS”

- From e2V
- 16x16 ISIS cells
 - $40 \times 160 \mu\text{m}^2$
 - 5-pixel buried channel storage register
 - Overall chip size $6.5 \times 6.5 \text{ mm}^2$

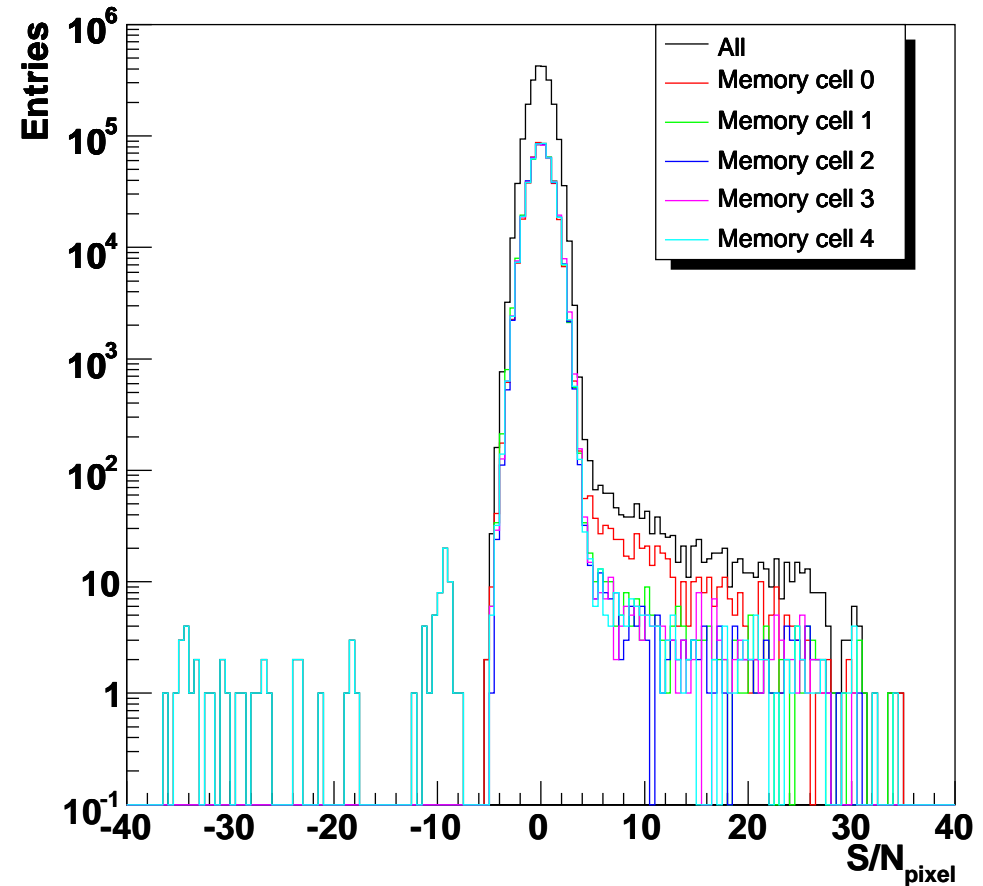


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Signals

- ^{55}Fe signals as seen in TB setup at Bristol
- In freezer at -15°C



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Test Beam plans

- 3 week testbeam at DESY
- Starting October 15th
- ISIS telescope:
 - 5 ISIS sensors in a row
 - Self-contained telescope

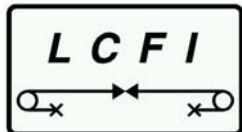
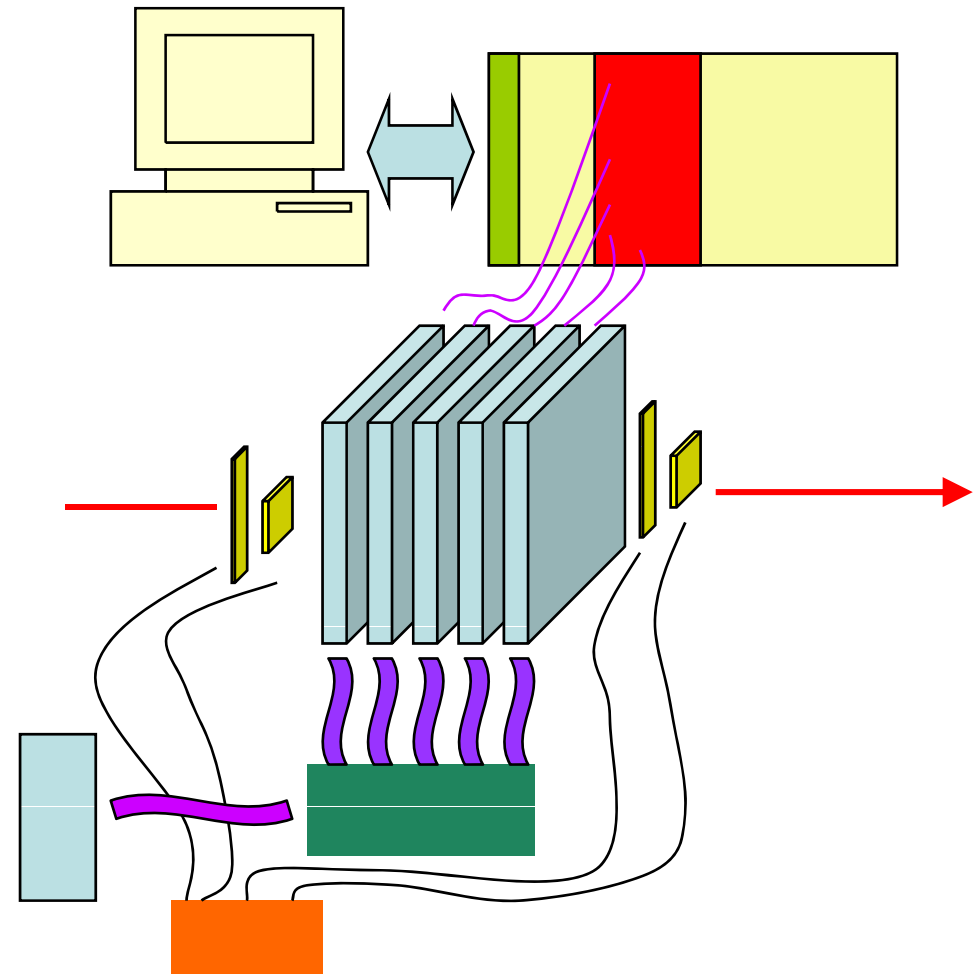


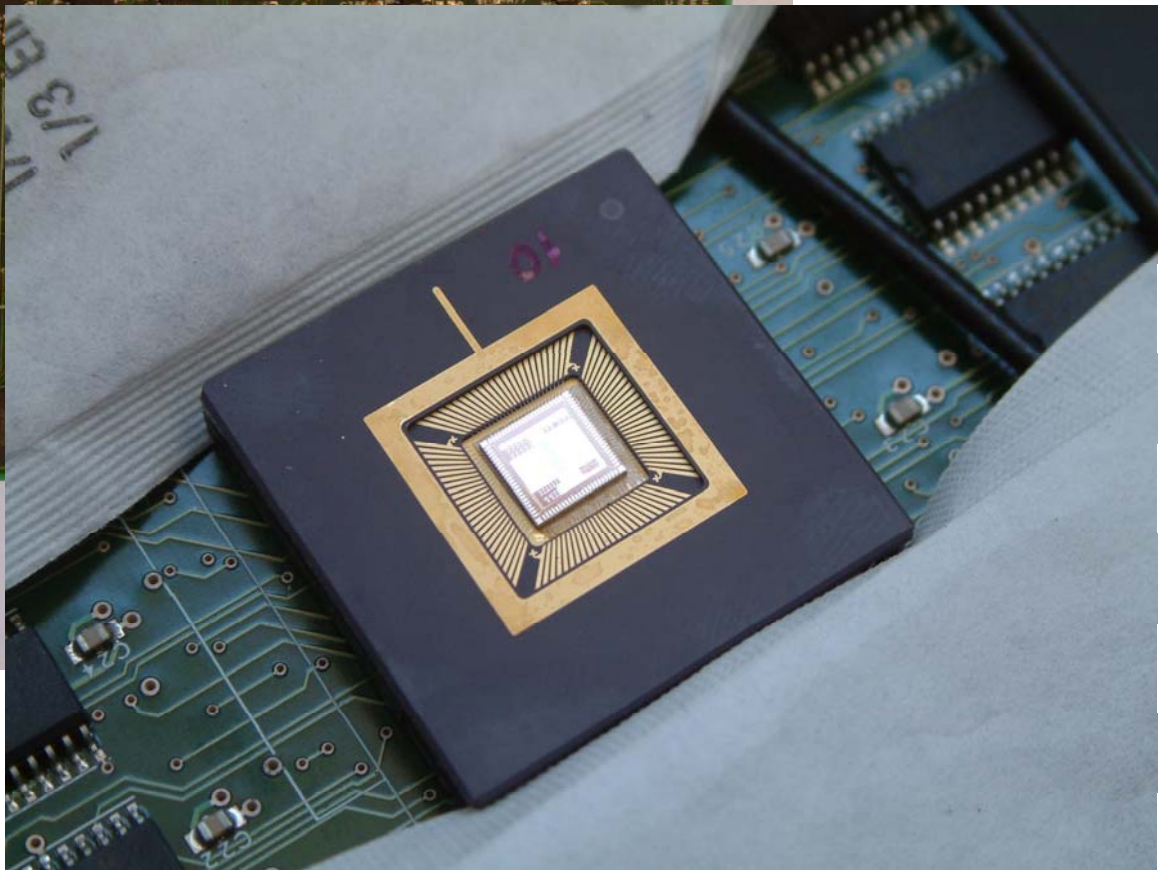
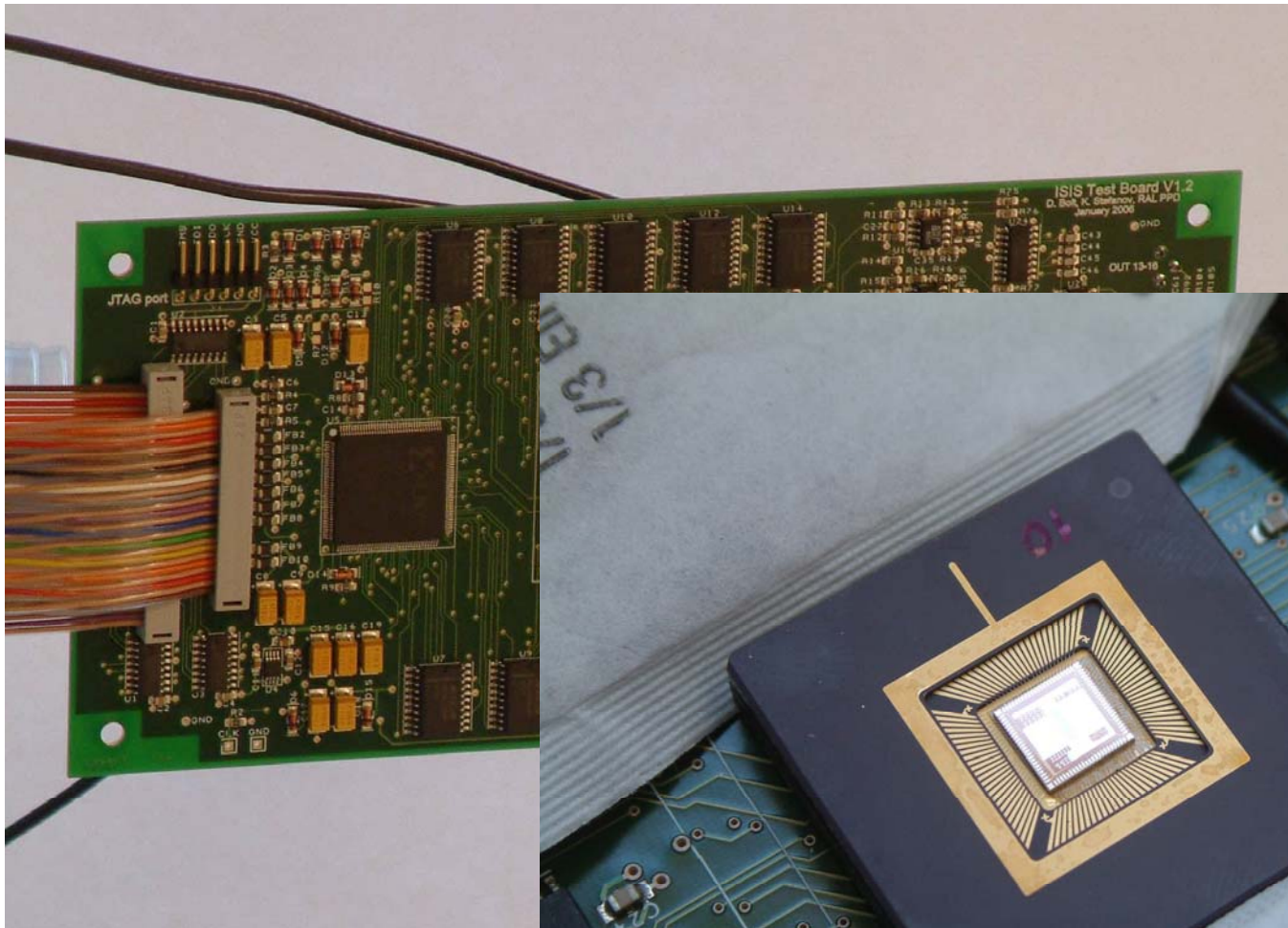
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Set up: brief overview

- 5 ISIS sensors
- 6 GeV e-
- Coincidence of 4 scintillators to trigger
- BVM yields logical signals to ISIS
- VME based ADCs readout ISIS
- Data to disk



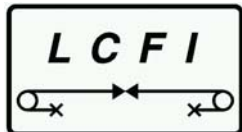


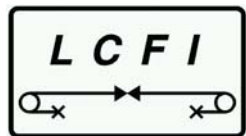
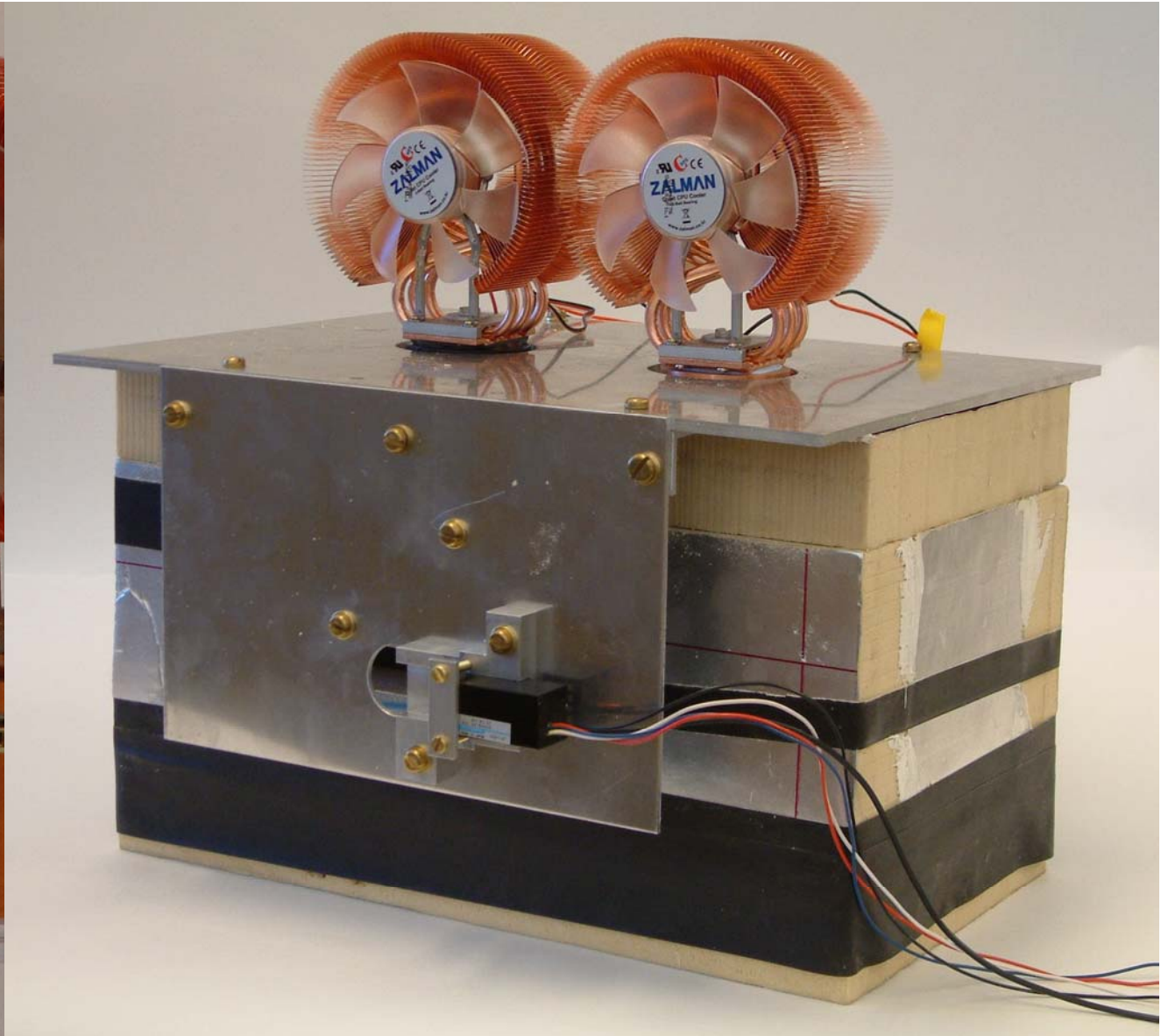
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Mechanical setup

- Each sensor placed in metal box with precision alignment:
 - fiducial region of each chip $560 \times 2240 \mu\text{m}^2$
 - Only overlap area useful
- 5 boxes bolted together in foam cryostat
 - Cooling using Peltier elements
 - Successfully cooled to -20°C
 - Flushing with dry nitrogen





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Summary

- First beam tests of ISIS devices to start very soon
- Self- contained system using EUDET trigger logic unit.
- Step on the way to using EUDET telescope as a “validation user”



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