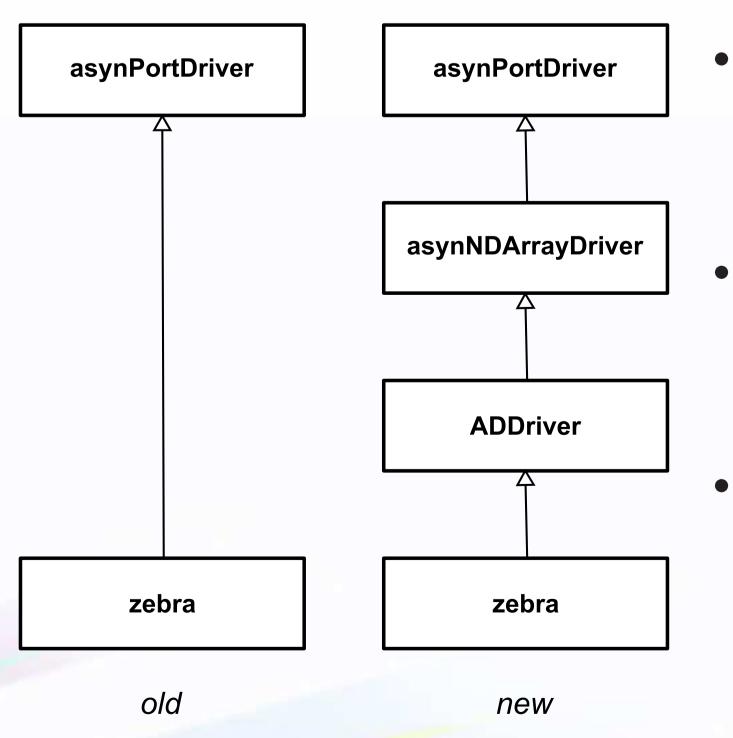
Synchronising high-speed triggered image and meta data acquisition for beamlines

N. De Maio, J. A. Thompson, A. P. Bark, T. M. Cobb Diamond Light Source Ltd.

control system samples system (environment) Trigger source? Synchronisation? Data destination?

Architecture hardware hardware hardware AD AD HDF5 files instances HDF5 files instances AD HDF5 HDF5 AD HDF5 AD HDF5 EPGA logic data trigger signal Zebra-driven data acquisition existing modified new

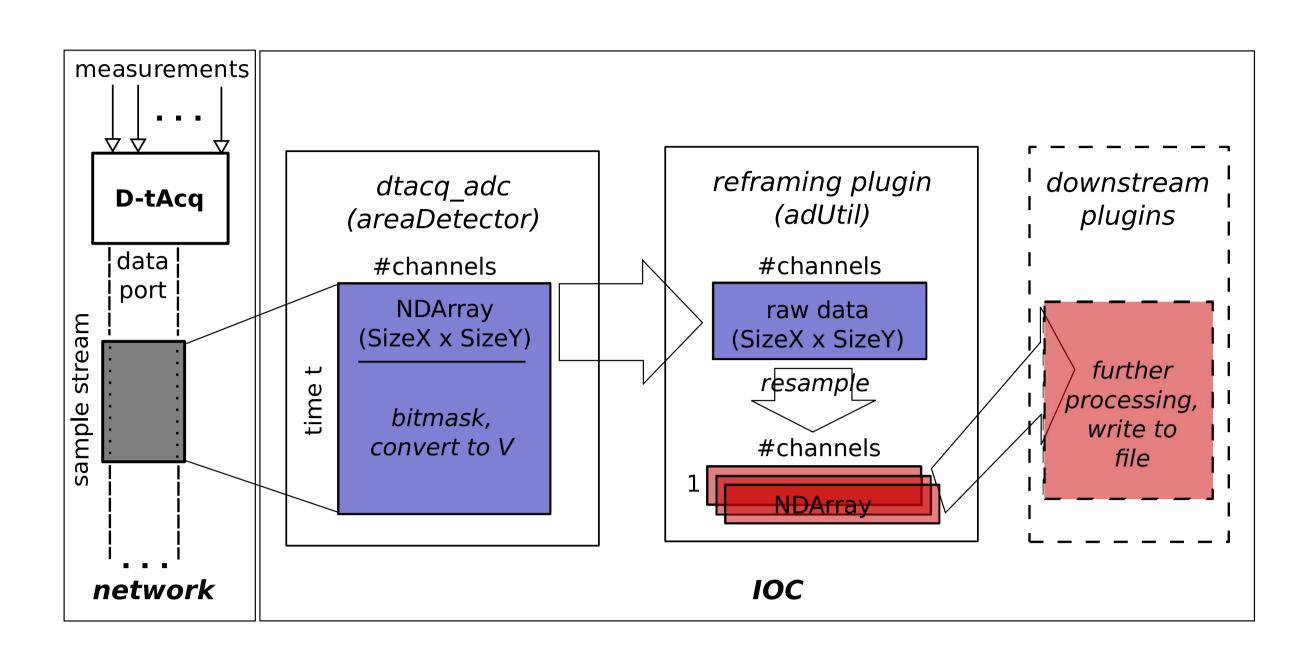
Zebra Driver Modifications



- Inherits data structures for image acquisition
- Produces a stream of 11x1 NDArrays, one per scan point
- Zebra Arm/Disarm equivalent to AD Start/Stop

Old Vs. new inheritance tree

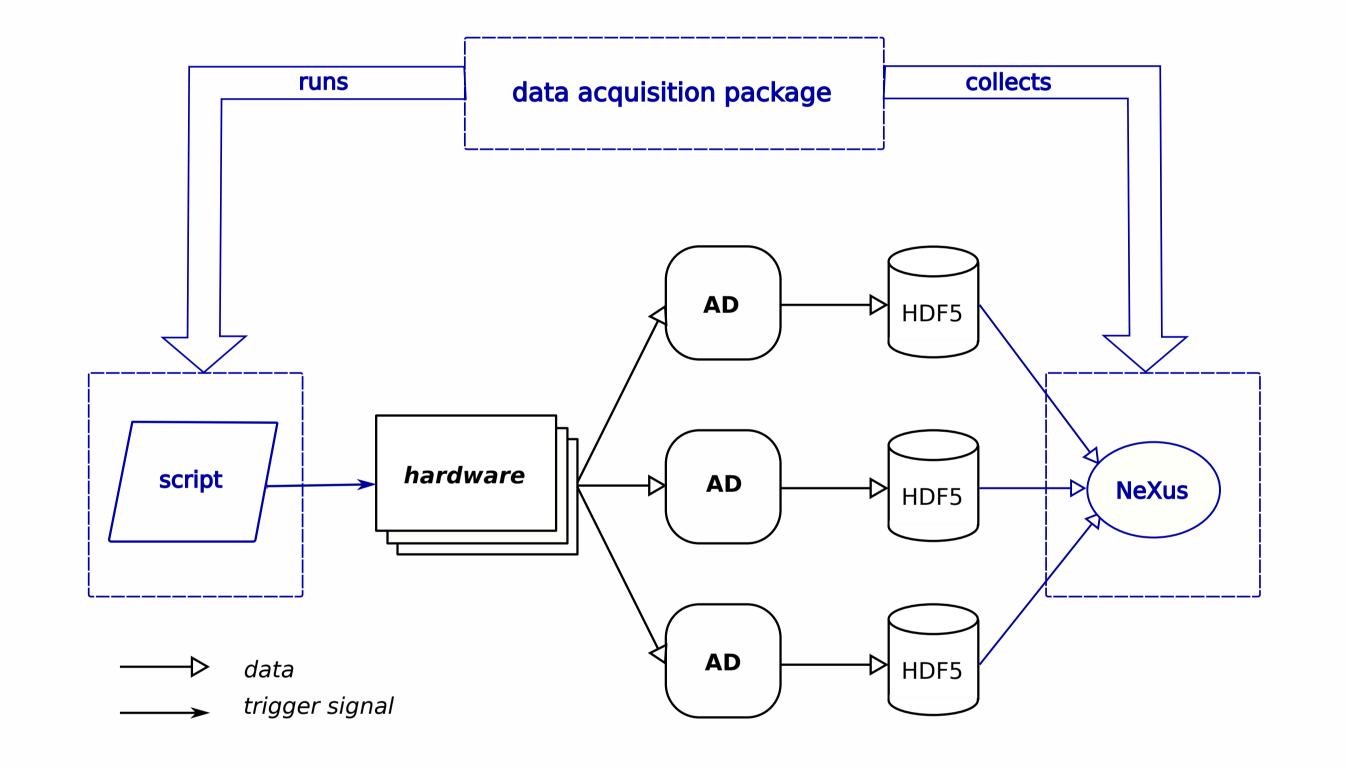
Data Flow from ADC



Data flow in the areaDetector plugin chain



Integration



Role of high-level data acquisition package

Conclusions

- Three or more parallel pipelines allow modular integration into larger systems.
- Hardware triggering ensures synchronised data from multiple devices at higher frame rates.
- Drivers derived from areaDetector provide a unified interface to configure the system.
- The areaDetector plugin chain is essential for added overall flexibility.
- Some care when choosing queue or frame sizes may be required.

