LIMA: A Generic Library for High Throughput Image Acquisition

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Introduction – What is LIMA?

- Library for Image Acquisition
- Control system-independent
- Highly multithreaded, event-based
- C++, Python/SIP

Control layer (LimaCore)

Hardware interface (plugins)
- Basic acquisition control
- Optional capabilities:
  - RoI, Bin, Video

Detector-specific control

Applications:
- TACO, TANGO, Xbpm

Diagram:
- Application
- Control Layer
  - Display, Saving, Accum
  - Image, Acq, Buffer
- Detector-Specific Control
  - Basic acquisition control
  - RoI, Bin, Video
- Detector API
  - DetInfo, Sync, Buffer
  - Rol, Bin, Video
- Hardware Interface
Features – What does it provide?

• Geometric image transformations
  ▪ Reconstruction, Bin, RoI, Flip & Rotation, Stripe concat.

• Basic image processing
  ▪ Multi-RoI Statistics, Centroid (BPM), RoI⇒Spectrum
  ▪ Background/Flatfield, SPD, Accumulation, Mask

• Automatic & manual file saving
  ▪ EDF, Nexus, Raw
  ▪ Multiple parallel streams

• Generic Video interface and live visualisation
  ▪ Common video modes (mono/color), Gain
  ▪ Spec Shared Memory (SPS)

• External user plugins
Detectors – What is supported?

- Simulator
- ESRF: Frelon, Maxipix (Single, 2x2, 5x1)
- Dectris: Pilatus, Mythen
- PCO: Dimax (❌)
- GigE: Basler, Prosilica
- ADSC, MarCCD
- XPAD
- Roper Scientific (❌)

- Want yours?
  - “Just” implement the plug-in (hardware interface)!