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## Data backend system for fast multi megapixel detectors

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PSI develops a new data backend system for fast next generation 2-dimensional multi megapixel detectors for applications in tomography and cSAXS.

The system will handle frame rates up to the KHz range and data rates up to 10 GByte/s and beyond.

The backend system will support online quality control, initial data analysis and preview while it saves the pixel data to permanent storage in parallel.

Next generation megapixel detectors like Eiger have a fully modular architecture. Hence the maximum data bandwidth available on the detector to the backend system scales linearly with the detector's pixel count. The newly developed system will match the detector's modular architecture and allows similar bandwidth scaling. We will present the overall system architecture and its design guidelines like: To use standard server and IT components and no dedicated custom made hardware; to build a message-passing asynchronous multi process based parallel system and to use a scripting language for the top-level implementation.

Additionally we'll show by which means we intend to achieve sustained loss-less transfer of UDP datagrams close to 10GbE wire speed between detector modules and backend system. This is crucial to enable the detectors' use at production-quality synchrotron beamlines like cSAXS or Tomcat at SLS.

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