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Concepts and technologies used in contemporary DAQ systems

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The concepts and technologies applied in data acquisition systems have changed dramatically over the past 15 years. Generic DAQ components and standards such as CAMAC and VME have largely been replaced by dedicated FPGA and ASIC boards, and dedicated real-time operation systems like OS9 or VxWorks have given way to Linux-based trigger processor and event building farms. We have also seen a shift from standard or proprietary bus systems used in event building to GigaBit networks and commodity components, such as PCs. With the advances in processing power, network throughput, and storage technologes, today's data rates in large experiments routinely reach hundreds of MegaBytes/s.

We will present examples of contemporary DAQ systems from different experiments, try to identify or categorize new approaches, and will compare the performance and throughput of existing DAQ systems with the projected data rates of the LHC experiments to see how close we have come to accomplish these goals. We will also try to look beyond the field of High-Energy Physics and see if there are trends and technologies out there which are worth keeping an eye on.

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