Abstract
At the GSI accelerator facility, several optical beam instrumentation devices for transversal profile measurement are installed. Their readout is done with FireWire CCD cameras attached to a small embedded device, specialized for image processing tasks (National Instruments Compact Vision System 1456). Here a LabView application preprocesses the images based on user requests. The resulting data (e.g., projections, histograms, compressed or original images) is sent over Ethernet to a Windows or Linux PC, reaching frame rates above 30fps at VGA resolution. Using C++ with Qt libraries for networking and GUI purposes, platform independence without source code modification is achieved. Here the system components and software design to control CCD cameras and various other devices with an easy-to-use graphical user interface for machine operators are presented as well as first experiences of the system with beam.

New System: Distributed Digital Hardware
- CCD camera: AVT Martin F033B, VGA, monochrome, FireWire 1394a
- lens: Pentax B2514ER, remote controllable
- DAQ system: NI 1456 Compact Vision System (CVS), 733 MHz Intel Celeron CPU, 128MB RAM, 256MB flash drive, FireWire 1394a, Ethernet, integrated FPGA with digital I/Os, programmable with NI LabView Realtime, Vision, FPGA
- hardware in radiation-safe area wherever possible
- remote-controllable via XML commands over Ethernet: camera iris, camera trigger (timing interface)
- remote-resettable through IP-controlled power plugs
- standard industry interfaces: FireWire, Ethernet, RS232
- optical FireWire extenders so exceed limited FireWire cable length

Performance
- CVS CPU load and network traffic measured at different frame rates transmitting compressed or uncompressed images
  - max. achievable frame rates:
  - uncompressed: 16fps @ 42 MBit
  - compressed: 35fps @ 11 MBit

New System: Distributed Software
- access to all camera parameters like gain, integration time, resolution, trigger mode
- store data in buffers in case of heavy network traffic or unavailability of the PC/client
- disable camera trigger when camera is still busy
- XML interface for CVS and camera control

BeamView at Scintillator Screen Experiments
experiment by E.Gütlich: wavelength examination with color camera (AVT Martin F033C) in 2008
all samples irradiated by $^{11}$B@ 11.4MeV/u @ ~12uA, 200µs pulse length, 2*10^{10}ppp