

S800 DAQ

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S800 Detectors

▶ Object box

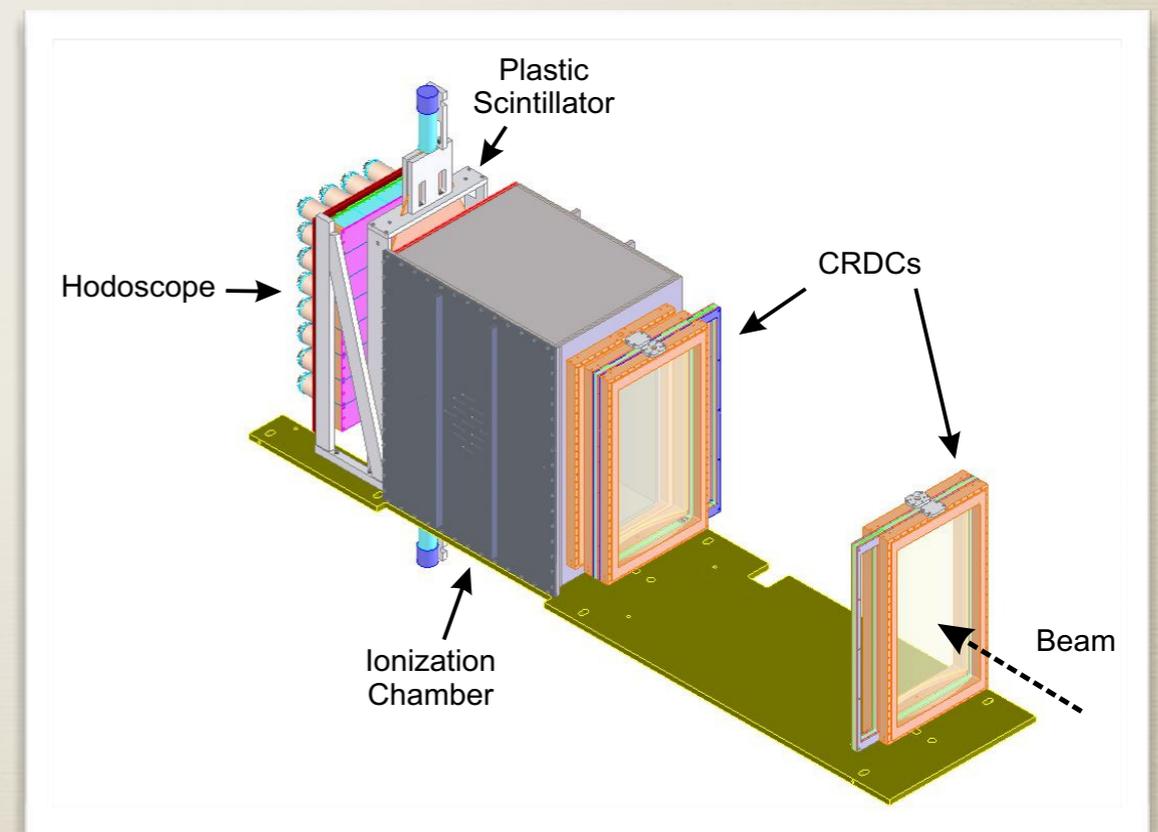
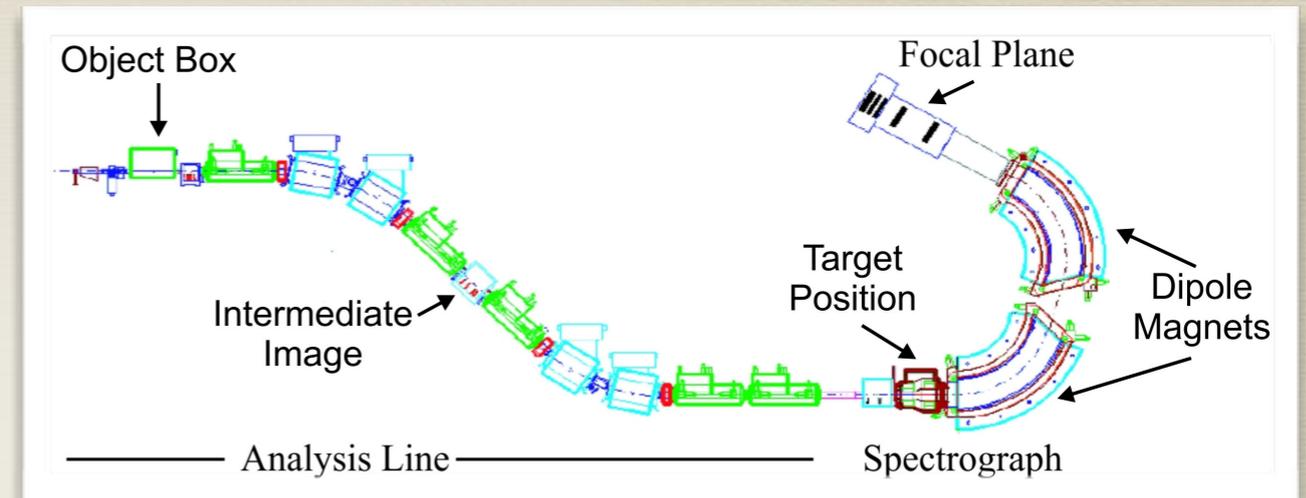
- ▶ Plastic scintillator (1 channel)
- ▶ Silicon detector (1 channel)
- ▶ MCP detector (5 channels)

▶ Intermediate image

- ▶ Tracking PPACs (256 channels)

▶ Focal plane

- ▶ Cathode Readout Drift Chamber (CRDC) (450 channels)
- ▶ Ion Chamber (16 channels)
- ▶ Plastic scintillator (2 channels)
- ▶ CsI Hodoscope (32 channels)

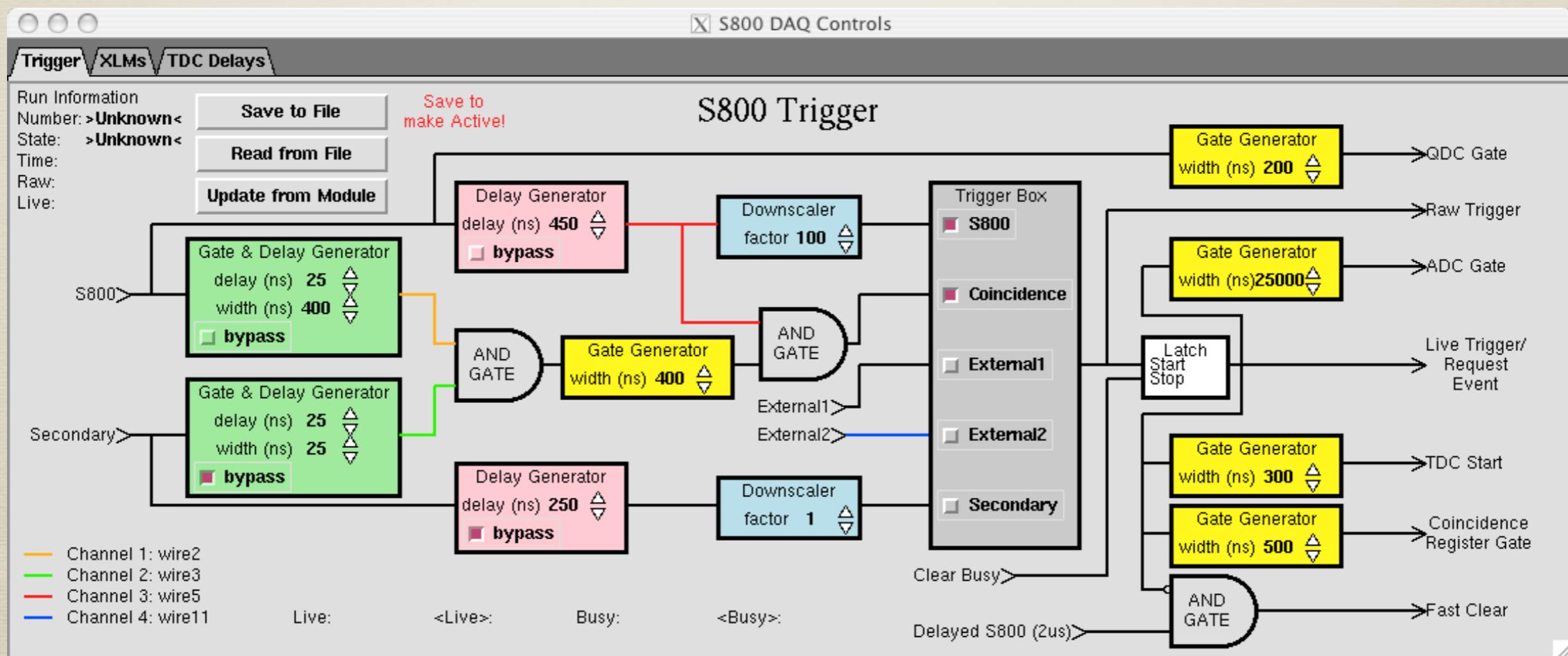


An evolving hybrid system...

- ▶ *The S800 was commissioned in 1996*
 - ▶ *Legacy CAMAC modules still used (peak sensing ADC, FERA)*
 - ▶ *New FPGA technology introduced in ~2000*
 - ▶ *USB-based crate controllers (CC-USB, VM-USB) to boost speed*
- ▶ *Mixed analog and digital*
 - ▶ *Analog used for Ion Chamber, Plastic scintillator, Hodoscope*
 - ▶ *Digital electronics used in STAR TPC used for CRDC and TPPAC*
 - ▶ *FPGA-based trigger module for total remote control*
 - ▶ *Time stamp synchronization of crates and exterior DAQ*

FPGA application: S800 trigger

- ▶ Greatly reduces trigger and timing setup times
- ▶ Trigger configuration can be easily recorded
- ▶ Easy customization to different needs



Coupling to other systems

- ▶ *In the past...*
 - ▶ *Merging of other detectors with S800 in single DAQ*
 - ▶ *Time consuming, debugging painful, slow*
- ▶ *Nowadays... time stamps!*
 - ▶ *S800 DAQ only shares clock, busy and trigger signals*
 - ▶ *Independent system is much more robust*
 - ▶ *Parallel DAQ systems are faster*
 - ▶ *Flexible: can either provide or receive time stamp clock*
 - ▶ *Coupled to HiRA, CAESAR, GRETINA, LENDA, MoNA-LISA (Sweeper), SeGA (DDAS)*