

Summary of integration and control sessions

D. Gates

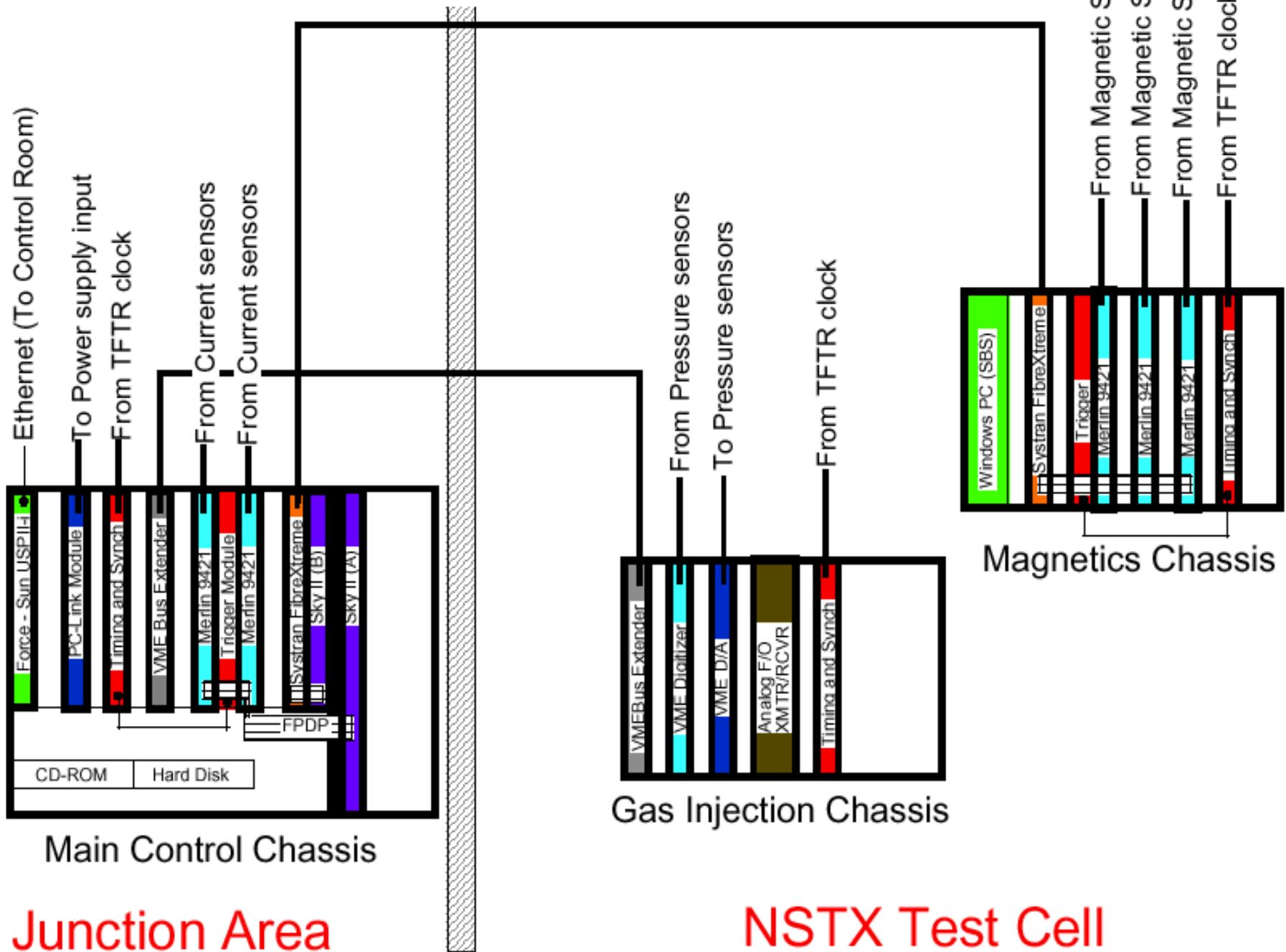
6/26/02

Topics



- Control hardware
- Control software development
- Vertical stability
- Diagnostics
- Explicit requests

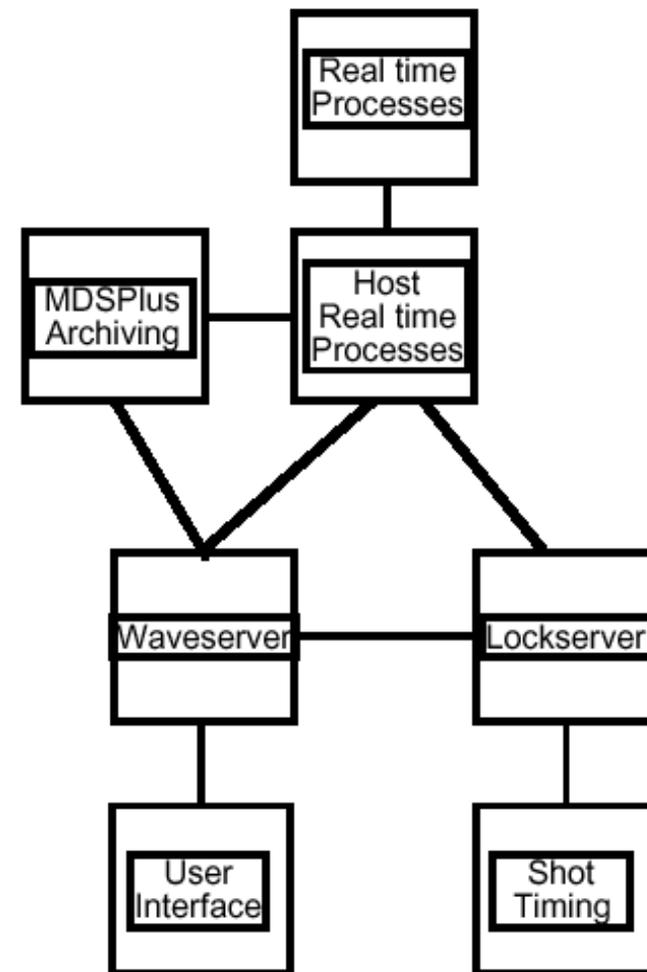
Control System Block Diagram



Plasma Control System (PCS) implemented



- PCS (developed at GA) is a flexible distributed software system
- Installation and customization for NSTX was (relatively) straightforward
- Is now integrated with MDSplus for data storage/retrieval



rtEFIT/isoflux control on NSTX



- Code developed for use on DIII-D (J. Ferron) - adapted for use on NSTX
- Demonstrated for limiter plasma
- Will be made into a useful tool early in the next run

Vertical Stability



- Center Stack upgrade has $\kappa \sim 3$ with coils far from plasma - hard to stabilize
- MHD group wants higher κ – *now*
- Need to initiate effort to optimize vertical stability
- May require substantial hardware improvements (power supplies - communication hardware - passive plates)

Control Diagnostic Upgrades



- MSE will be available soon (FY03-04)
 - Incorporation into rtEFIT seems straightforward
- Thomson could be integrated now
- CHERS has issues
 - Background subtraction
 - CCD data

Requests for new control capabilities



- Extend elongation range
- MHD global mode stabilization
- Add PF4 to coil set
- Density control?
- β control - NBI
- Control CHI plasmas
- EBW edge profile and launch angle control

Future Options



- New Measurements need real-time interpretation
 - Thomson scattering
 - CHERS?
 - MSE

⇒ Full kinetic rtEFIT!!!
- β control with NBI
- RF - real time ray tracing - J(r)
 - Current profile control
- NBI - real time Fokker-Planck / Monte Carlo
- Real time MHD stability calculations