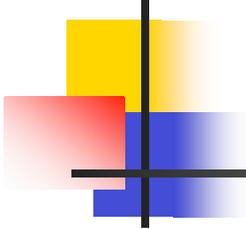


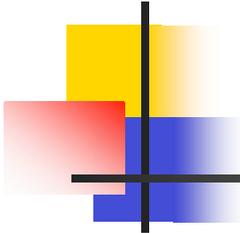
Applications of F3RP61 in Accelerator Controls

J. Odagiri



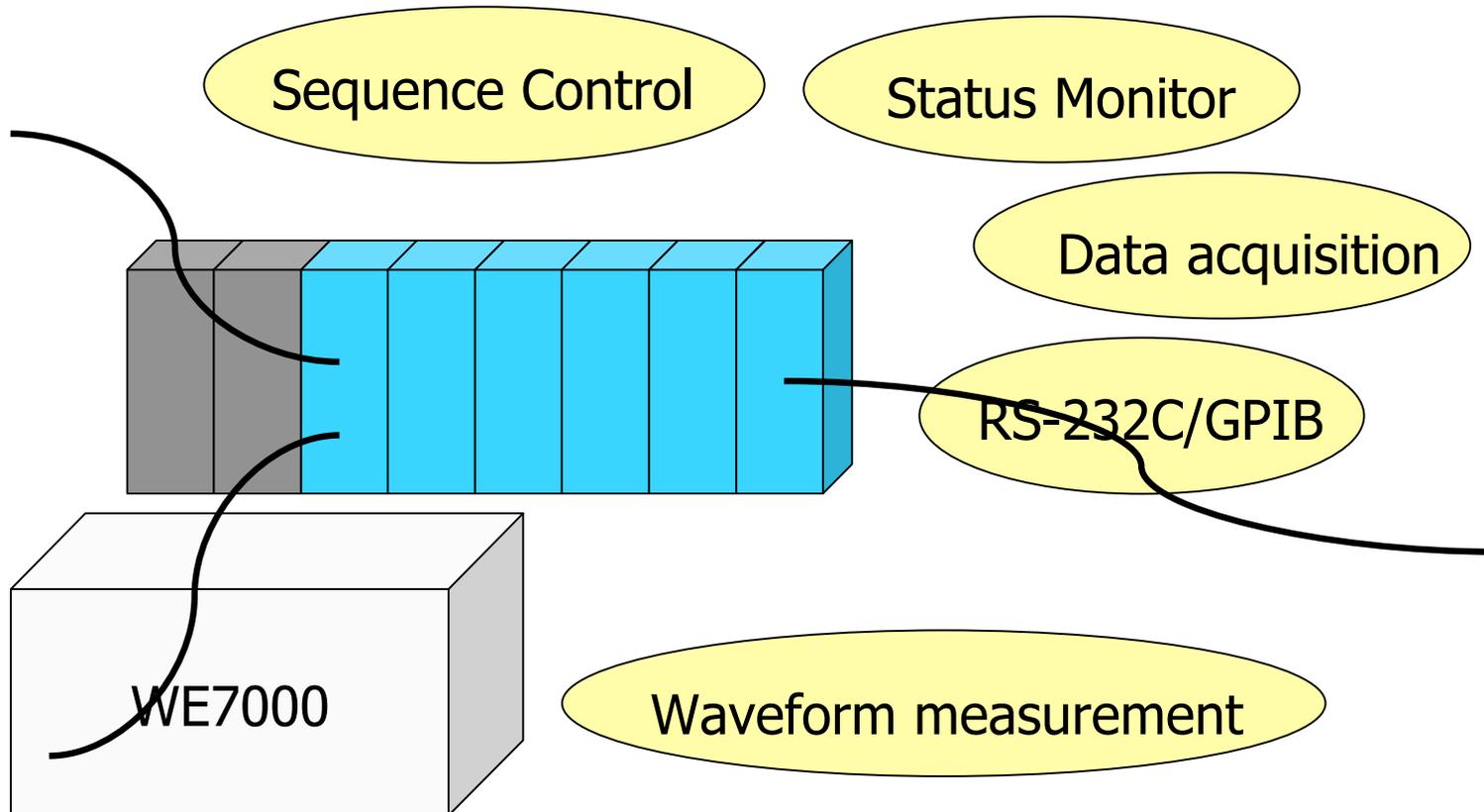
Contents

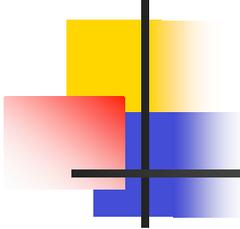
- Overview: F3RP61 covers most of your requirement! But How?
- Working Applications
 - Sequence control examples
 - Interlock system: Status monitor example
 - Fast beam current monitor: Data acquisition
 - Waveform observation with WE7000, etc.
 - Communication over RS-232C and GPIB
- Some advertisement



Overview

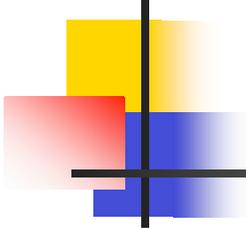
F3RP61 covers most of your requirement!





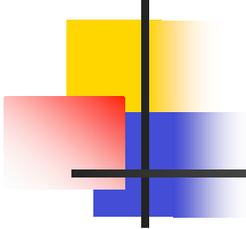
Sequence control (1/2)

- The basic idea is to replace ladder programs with EPICS sequencer (SNL programs)
 - "Japan Anti-ladder-program Society (JALPS)"
 - J. Odagiri (KEK), M. Komiyama (RIKEN), M. Takagi (KIS)
 - Could be extended to "World Anti-ladder-program Society" if you join us
 - Anyone who supports the following message can join us
 - No payment required to join
 - No annual payment required
 - SNL programs are much easier to read and write
- Why don't you use F3RP61 for sequence control?



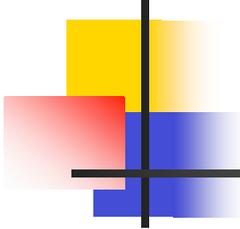
Sequence control (2/2)

- Power supply control
 - Pulse Q magnets (HER, LER) of KEKB main rings
 - Electro-static/magnetic septa of J-PARC slow extraction line
 - Bending magnets and steering magnets of ATF final focus line
 - (A part of) Beam buncher, RFQ Linac, Rebuncher of RIBF at RIKEN
- Motion control
 - Beam mask of KEKB main rings
 - Septa and screen monitors of J-PARC slow extraction line
 - (A part of) Insertion and extraction of Faraday cups of RIBF injector
 - Two sets of Superconducting ECR Ion Sources of RIBF



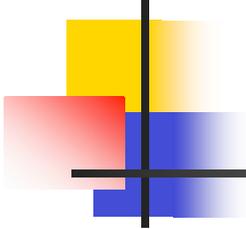
Status monitor (1/2)

- Handling of I/O-relays is subject to ladder programs running on sequence CPUs
 - JALPS (Japan Anti-ladder-program Society) accepts and supports it as an exceptional case
- Monitor of I/O-relays is subject to EPICS running on an F3RP61
 - Scanning over PLC-bus is much faster
 - Standard mbbiDirect (16 bits) will do it for you
 - EPICS monitor can reduce network traffic
 - If no change in the status, no report required
- **Why don't you use F3RP61 for status monitor?**



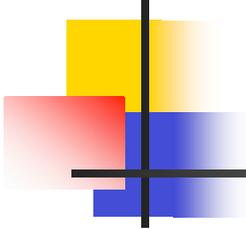
Status monitor (2/2)

- J-PARC at KEK Tokai-site
 - Magnet protection system of slow extraction line
 - Personnel protection system of slow extraction line
 - Magnet protection system of fast extraction line
 - Personnel protection system of fast extraction line
 - Personnel protection system of hadron experiment beam line
- ATF at Tsukuba-site
 - Interlock system for magnet protection of ATF final focus line
- RIBF at RIKEN Wako-site
 - Two sets of Superconducting ECRIS
 - Beam buncher, RFQ Linac, Rebuncher and a part of Faraday cup
- CNS experimental hall at RIKEN Wako-site
 - Vacuum control and beam monitor at SHARAQ (Spectroscopy of hadronic systems with radioactive quantum beam)



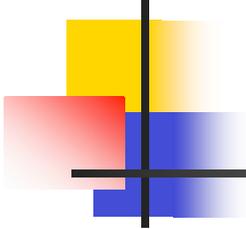
Data acquisition

- FA-M3 has a pulse catch module that suits DAQ applications
- FA-M3 has a high-speed A/D module that suits DAQ applications
- F3RP61 supports I/O interrupt
- **Why don't you use F3RP61 for DAQ applications?**
- Implementation and evaluation is in progress for the fast current monitors of J-PARC fast extraction line
- Wait until you here the good news from us!



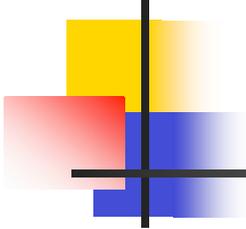
Waveform observation

- F3RP61 has two Ethernet interfaces
- F3RP61 can work as an disk-less IOC to interface with WE7000 measurement station and other devices with Ethernet connection
 - No reason to use VME/VxWorks as IOC if no VME board in your system
 - netDev, asyn are also available to interface with data loggers and oscilloscopes
- Why don't you use F3RP61 for waveform observation?
- I just put the test on the top of my things-to-do-list



RS-232C and GPIB

- Unfortunately, there are devices that have only RS-232C/GPIB interface
- Why do we have to use such devices?
 - Business is business...
 - We have to get our work done to live
- FA-M3 has RS-232C/GPIB interface
- **Why don't you use F3RP61 to support such devices?**
 - I never recommend RS-232C/GPIB
 - I just need to get my work done to live
- GPIB has been tested and used for power supply control



Some advertisement

- Lots of application programs for F3RP61 are pilling up at KEK and RIKEN
- All the programs are available for nothing
- Odagiri will be (occasionally) available to support you if necessary (for some good Chinese food (on you))
- We'd like to expect your contribution to make the asset richer and richer to promote F3RP61 world wide
- YOKOGAWA sometimes offers discount prices on occasion
- **Why don't you buy F3RP61?**