

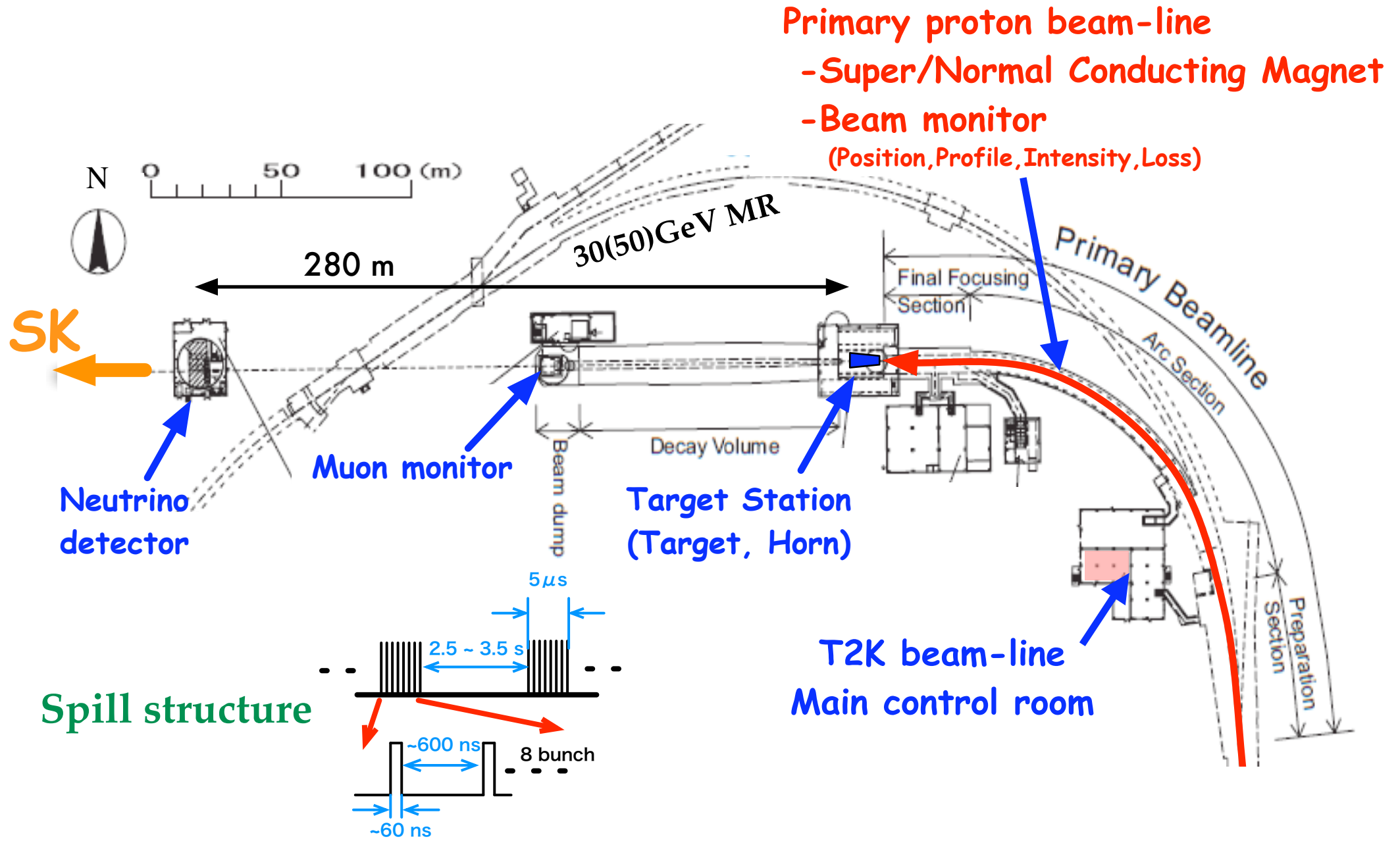
T2K controls / DAQ

~ beam control+DAQ system ~

Ken Sakashita for T2K collaboration

1. Introduction
2. Components
3. Read-out / software
4. Summary & Future plan

T2K beam line

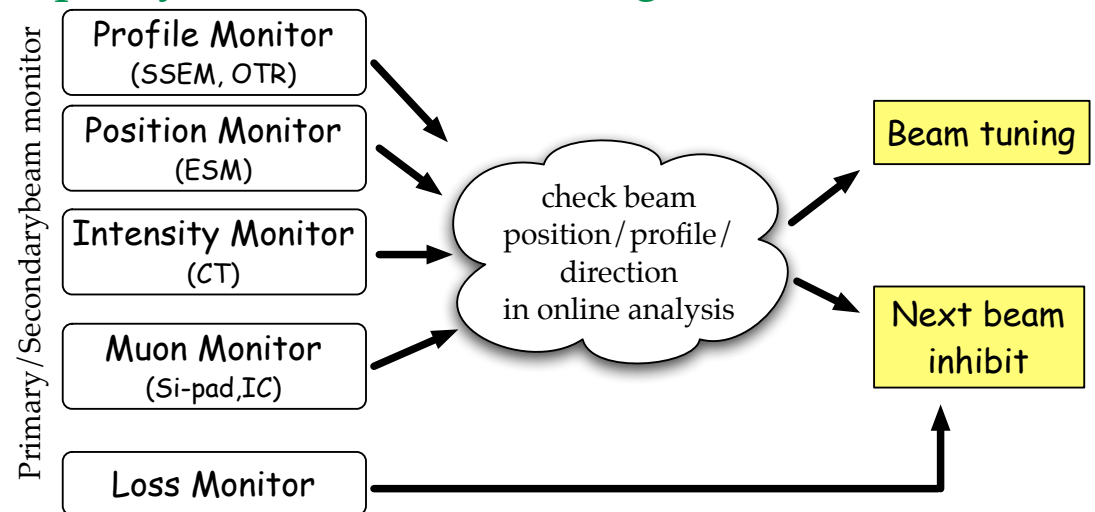


Beam control+DAQ system

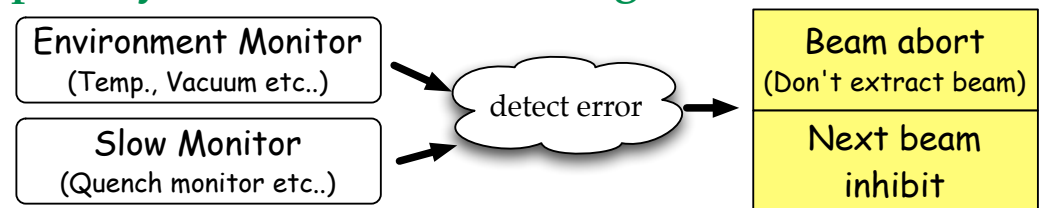
1. control primary proton beam
2. monitor primary / secondary beam
3. monitor beam-line equipments

- ☑ *requirement of beam position at the target < 1 mm shift*
- ☑ *precisely direct neutrino beam to SK < 1 mrad*
- ☑ *protect beam-line equipment from destroying*

Spill synchronized monitoring

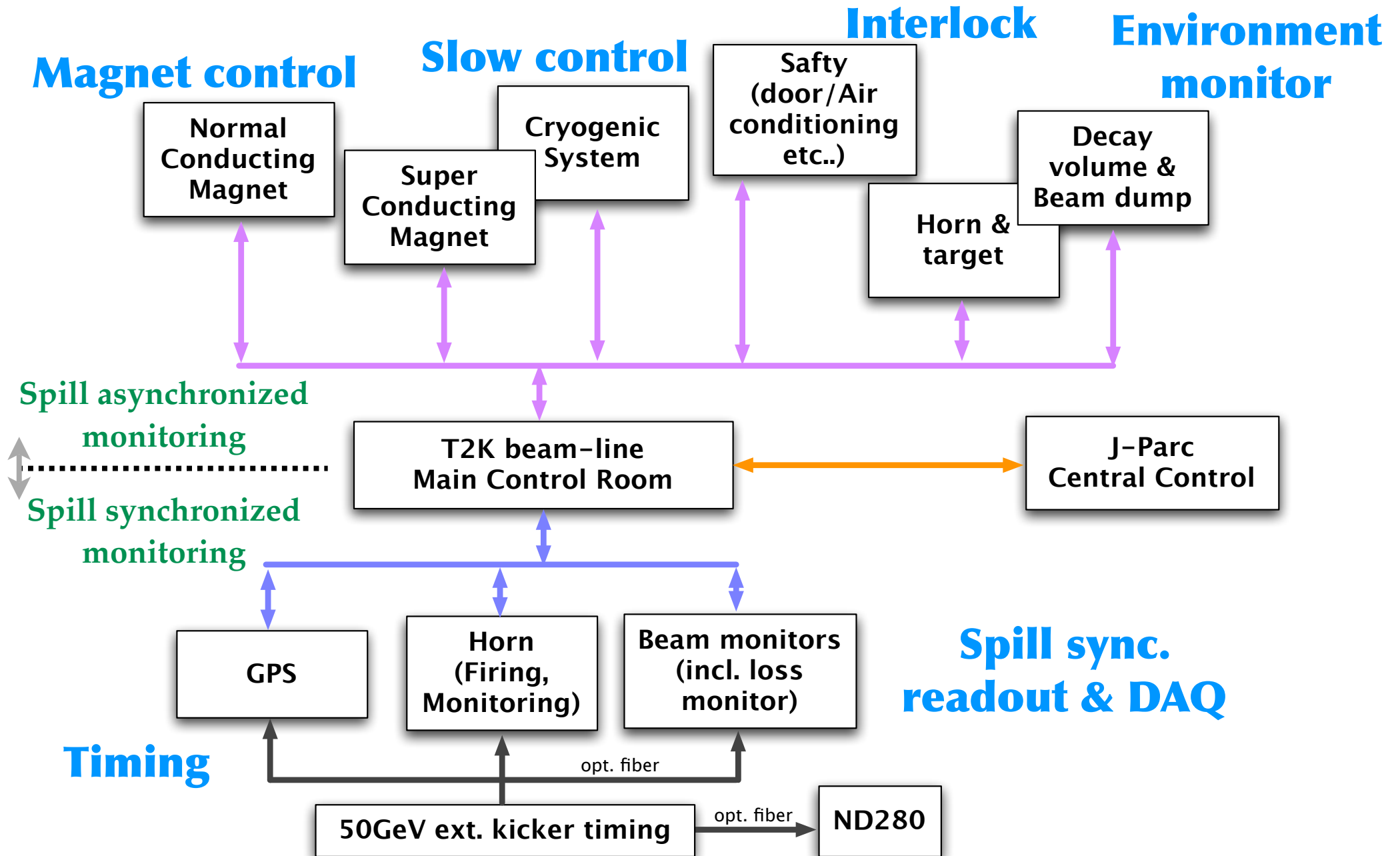


Spill asynchronized monitoring



- components

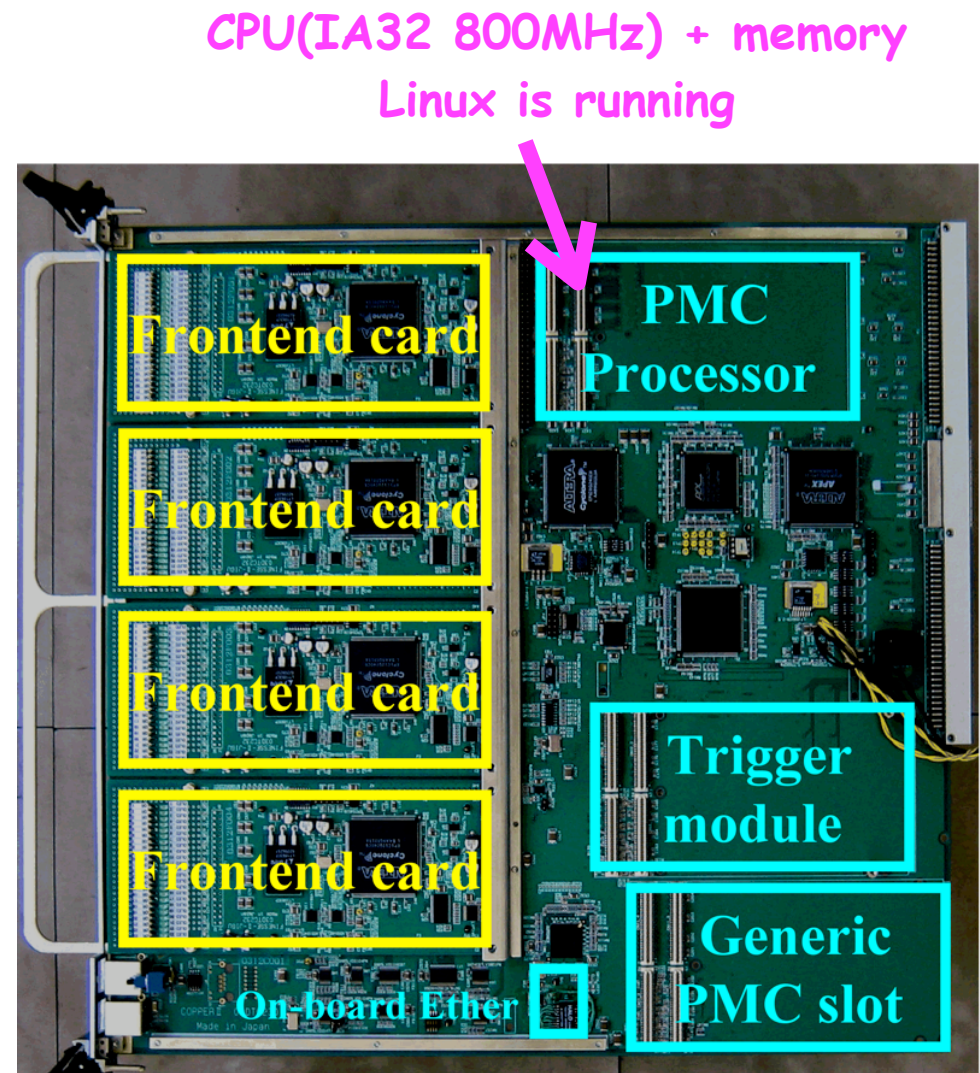
- Each component is connected through GbE



Read-out electronics

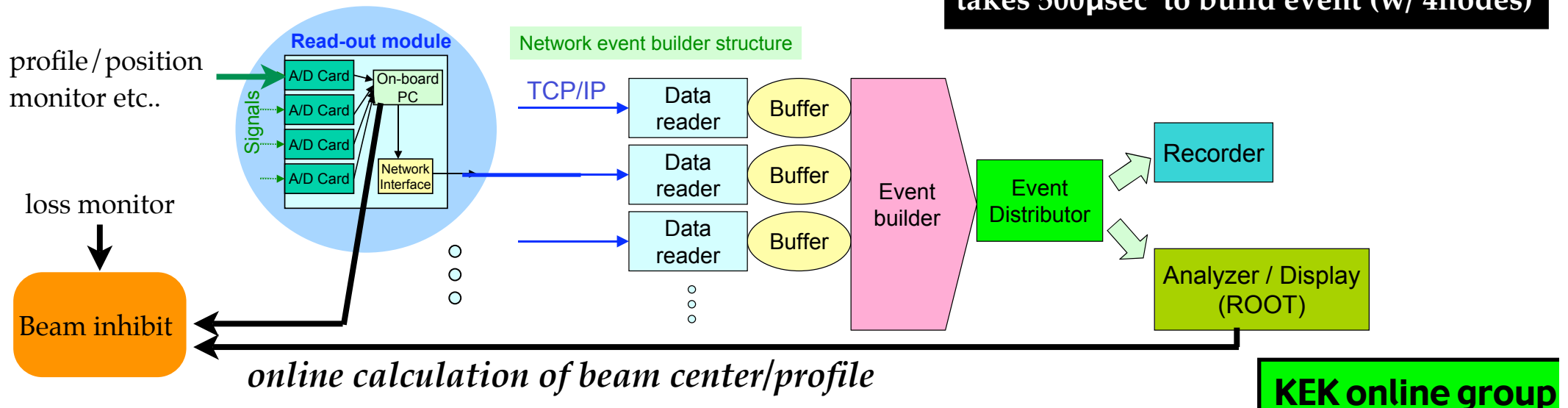
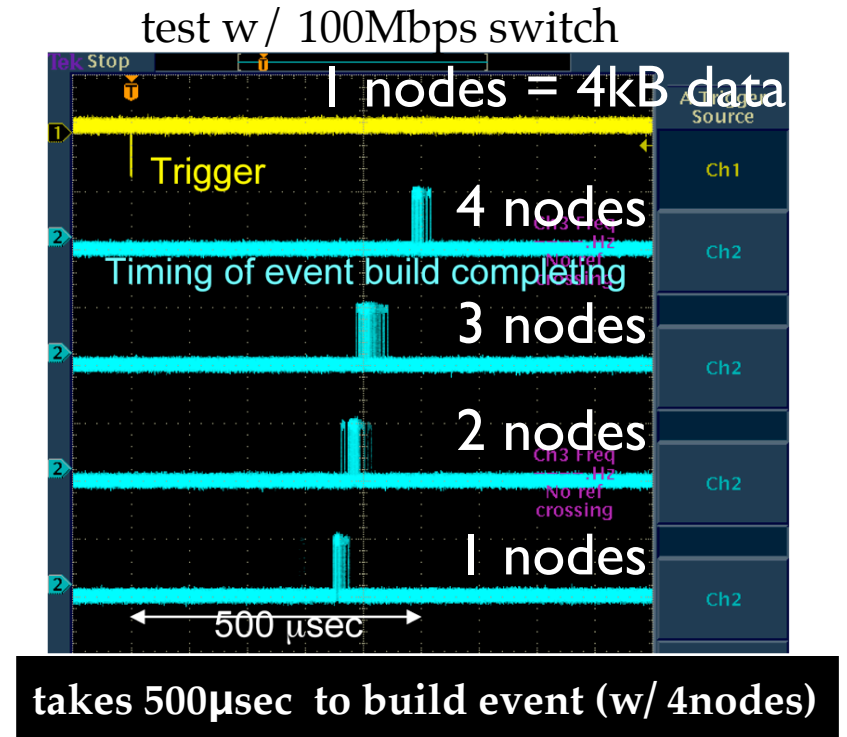
- record pulse shape w/ FADC in order to monitor beam every bunch
- Newly developed common readout platform
 - 65 MHz FADC as one of Front-end card
 - calculate beam center and width w/ CPU

KEK online group

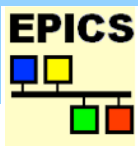


Data acquisition system

- Network distributed DAQ
 - total ~50 front-end nodes, ~1200 ch read-out
 - under developing
- online analysis of beam center / width etc..



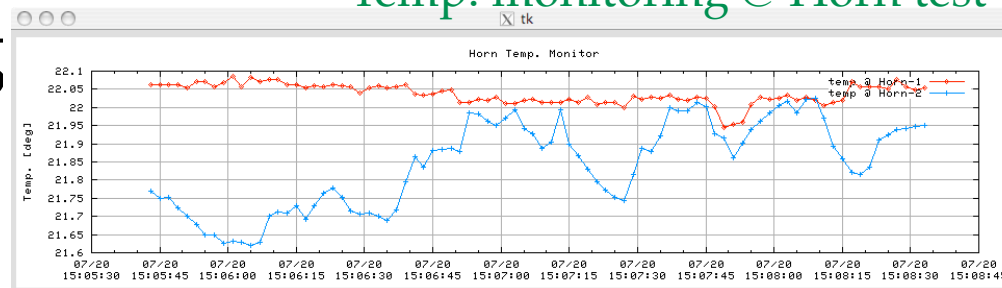
Slow monitor/control



- EPICS (common software framework)

Temp. monitoring @ Horn test

- environment monitoring (Temp., Vacuum etc..)



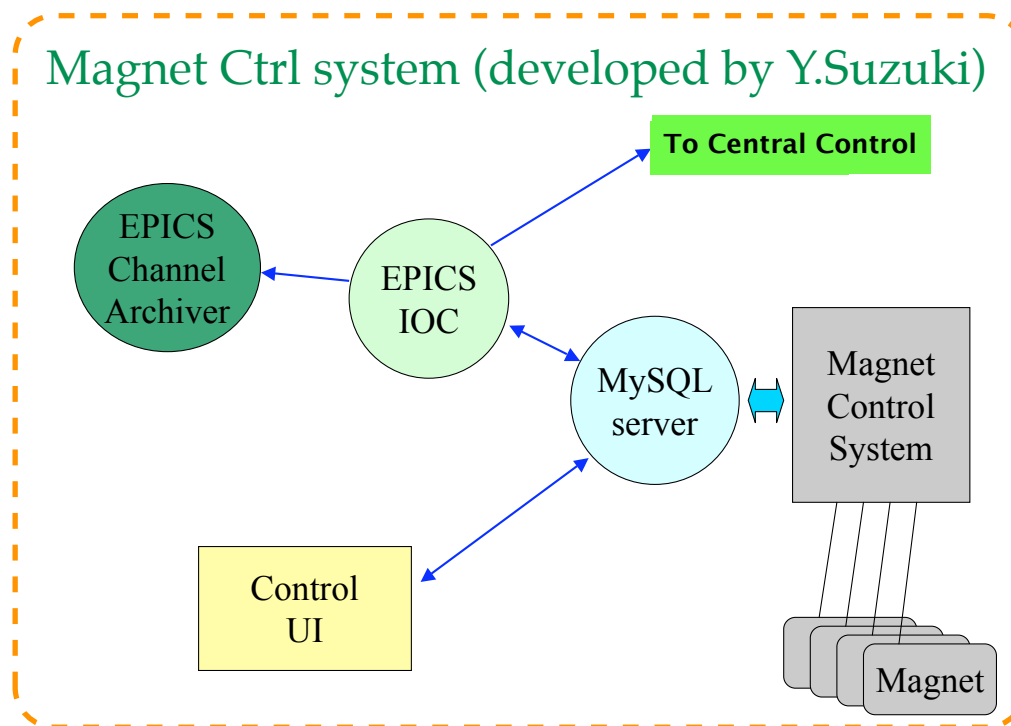
- communication w/ accelerator group

- Magnet control

- control w/ MySQL DB

- monitor w/ EPICS

Magnet Ctrl system (developed by Y.Suzuki)



Summary & Plans

- R&D and designing of each component are now in progress
- develop several software tools / database
 - Beam tuning tools
 - Spill database (beam loss, position, intensity etc..)
- start bench-testing from the end of this year at KEK
- construction of system will be started from 2008