DRAFT

Recycler BPM Software
Outline

The following outline identifies all of the software elements that must be developed or enhanced for the Recycler BPM Project. The front-end software elements in 1.0 are divided into major functional categories while the console application software elements in 2.0 are allocated to individual application programs.

1.0 Front-end Software
- 1.1 Measurement Control Subsystem
  - 1.1.1 ACNet Interface
  - 1.1.2 Background Flash
    - 1.1.2.1 Circular Buffer Trigger Control
  - 1.1.3 Flash
    - 1.1.3.1 First Turn
    - 1.1.3.2 Last Turn
  - 1.1.4 Closed Orbit
  - 1.1.5 Turn-by-turn
  - 1.1.6 Calibration
  - 1.1.7 Diagnostic
  - 1.1.8 Interactive Command Driven
    - 1.1.8.1 Support Old Measurement Requests/Replies
    - 1.1.8.2 Support New Measurement Requests/Replies
    - 1.1.8.3 Support Sequencer Requests
  - 1.1.9 Event Driven Acquisition
- 1.2 Data Buffering Subsystem
  - 1.2.1 ACNet Interface
  - 1.2.2 Background Flash Data
    - 1.2.2.1 Circular Buffer
    - 1.2.2.2 Fast Time Plot
  - 1.2.3 Flash Data
  - 1.2.4 Closed Orbit Data
  - 1.2.5 Turn-by-turn Data
  - 1.2.6 Diagnostic Data
  - 1.2.7 Shot Data Analysis Replies
- 1.3 Analog Acquisition Subsystem
  - 1.3.1 Digital Receiver I/O Driver
    - 1.3.1.1 Engineering Parameters in ACNet

1.3.1.2 Skip & Take / Board Transfer / DMA
1.3.2 Analog Data Processing
1.3.2.1 Flash
1.3.2.2 Turn-by-turn
1.3.2.3 Diagnostic
1.3.2.4 Scaled Position
1.3.2.5 Scaled Intensity (Sum Signal)
1.3.3 ADC Class API
1.4 Trigger/Timing Control Subsystem
1.4.1 Timing Signal Generator I/O Driver
1.4.1.1 Engineering Parameters in ACNet
1.4.1.2 MDAT Timing Adjustments
1.4.2 Measurement Timing Control
1.4.3 Background Flash Circular Buffer Trigger I/O Driver
1.5 Calibration Control/Acquisition Subsystem
1.5.1 Calibration Signal Generator I/O Drivers
1.5.1.1 Engineering Parameters in ACNet
1.5.2 Preamplifier Calibration Control
1.5.3 Calibration Measurement Mode
1.6 Digital Receiver Clock Subsystem
1.6.1 DDC Clock Generator I/O Drivers
1.6.1.1 Engineering Parameters in ACNet
1.6.2 DDC Clock Control API
1.7 Testing/Diagnostics Subsystem
1.7.1 Analog Channel Pair Raw ADC Data
1.7.2 Analog Channel Pair in-phase and quadrature Data
1.7.3 Timing Channel Delays
1.7.4 VME64x Crate Status Monitor
1.7.5 Transition Chassis Status Monitor

2.0 Console Application Software
- 2.1 Application Support Library
  - 2.1.1 Interactive Command Configuration/Request
  - 2.1.2 Event Driven Acquisition Configuration/Request
  - 2.1.3 Flash Data Read
  - 2.1.4 Turn-by-turn Data Read
  - 2.1.5 Diagnostic Data Read
- 2.2 Flash Application Program
  - 2.2.1 Measurement Request
  - 2.2.2 Flash
  - 2.2.3 Closed Orbit
  - 2.2.4 Data Display
    - 2.2.4.1 Position
    - 2.2.4.2 Intensity Proportional (Sum Signal)
    - 2.2.4.3 Intensity Threshold
- 2.3 Turn-by-turn Application Program
  - 2.3.1 Measurement Request
  - 2.3.2 Data Display
    - 2.3.2.1 Position
    - 2.3.2.2 Intensity Proportional (Sum Signal)
    - 2.3.2.3 Intensity Threshold
- 2.4 Calibration Application Program
  - 2.4.1 Measurement Request
  - 2.4.2 Data Analysis
  - 2.4.3 Data Display
    - 2.4.3.1 Position
    - 2.4.3.2 Intensity Proportional (Sum Signal)
- 2.5 Diagnostic/Engineering Application Program
  - 2.5.1 Engineering Parameter PMI
  - 2.5.2 VME & Transition Crate Status
  - 2.5.3 Diagnostic Measurement Request
  - 2.5.4 Diagnostic Data Analysis
  - 2.5.5 Diagnostic Data Display
    - 2.5.5.1 Channel Pair Raw ADC Counts
    - 2.5.5.2 Channel Pair In-phase & Quadrature Counts
    - 2.5.5.3 Channel Pair Position
    - 2.5.5.4 Channel Pair Intensity Proportional (Sum Signal)
- 2.6 Background Flash Circular Buffer

2.6.1 Buffer Control
2.6.1.1 Trigger Specification
2.6.1.2 Post Trigger Retention Count
2.6.2 Buffer Display
2.6.2.1 Measurement Data Type Display