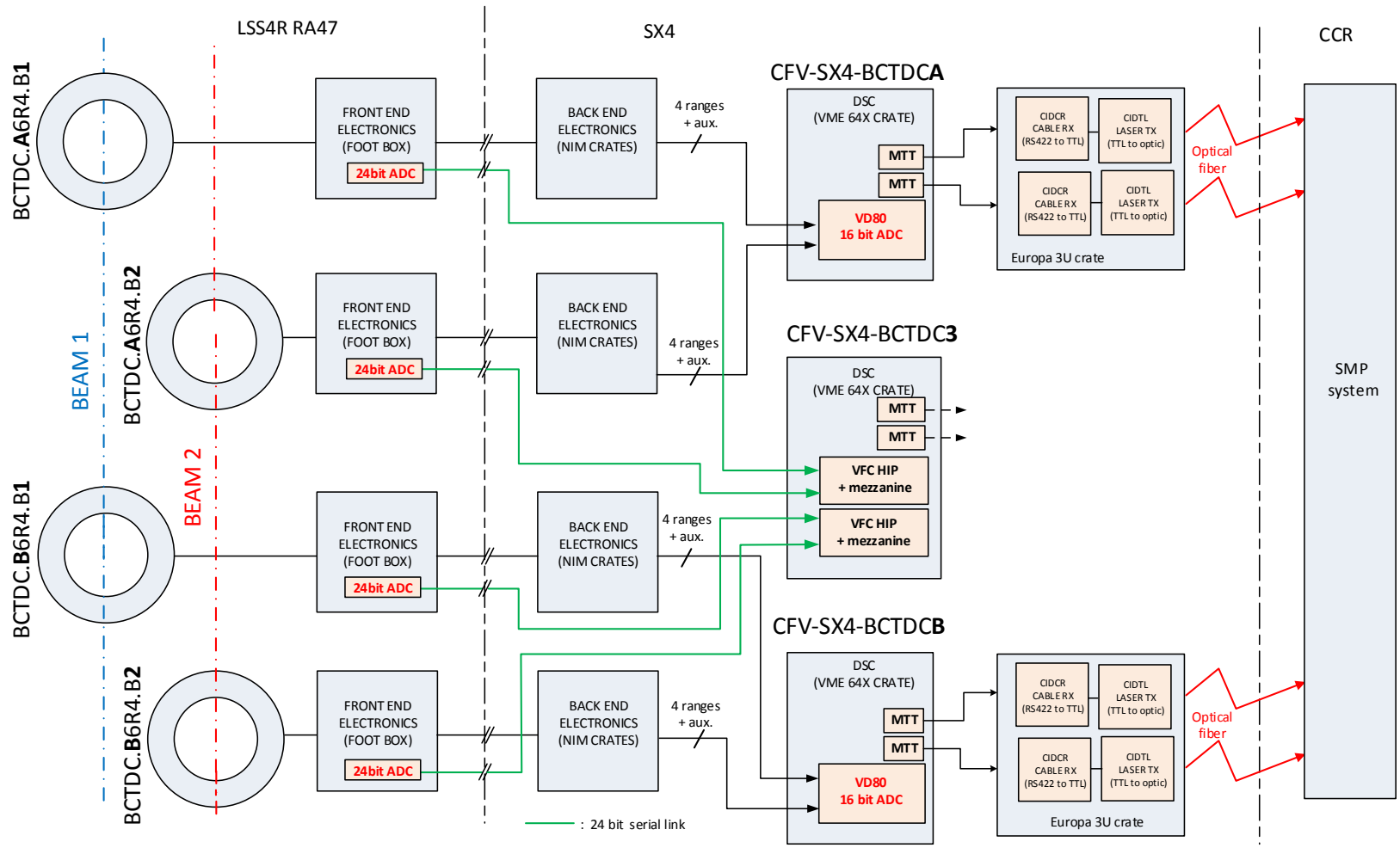# SMP:
Summary of changes and re-commissioning after EYETS 2016-17

I. Romera, S. Gabourin

Summary of changes - LHC

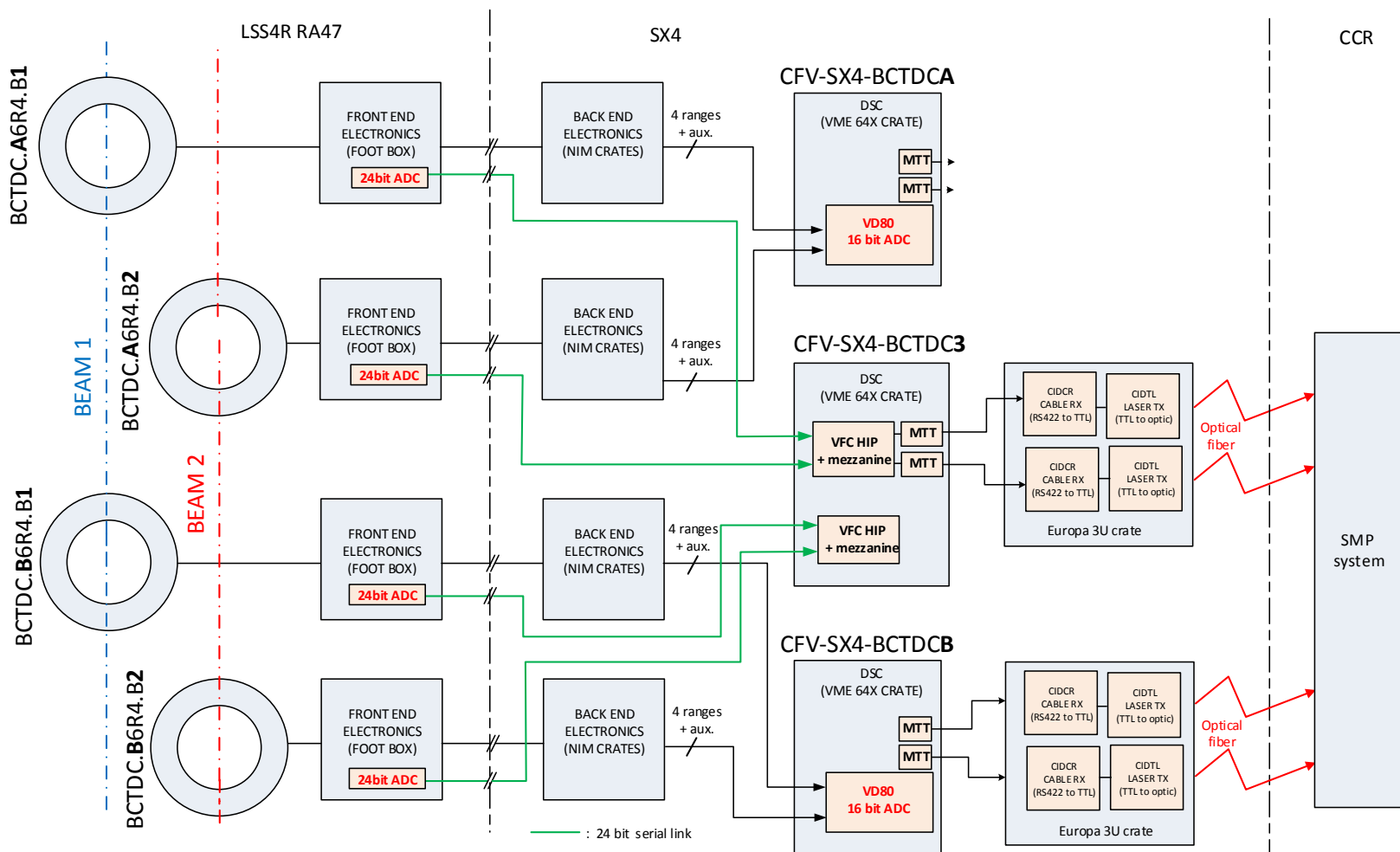- **Timeout for Setup Beam Flag equations** => From 4.5h to 12h

- **Squeezing Factor window limits** => From beta* = 10m to 30m between max and min limits that can be set by LHC-OP

- **New intensity link from 24-bit BCTDC module** located close to monitors (see P. Odier – 141st MPP)
  - 2 new optical links to SMP, **successfully tested in 2016 TS3**
  - **No change required on the SMP** (intensities have the same format and units)

LHC BCTDC links to SMP in 2016

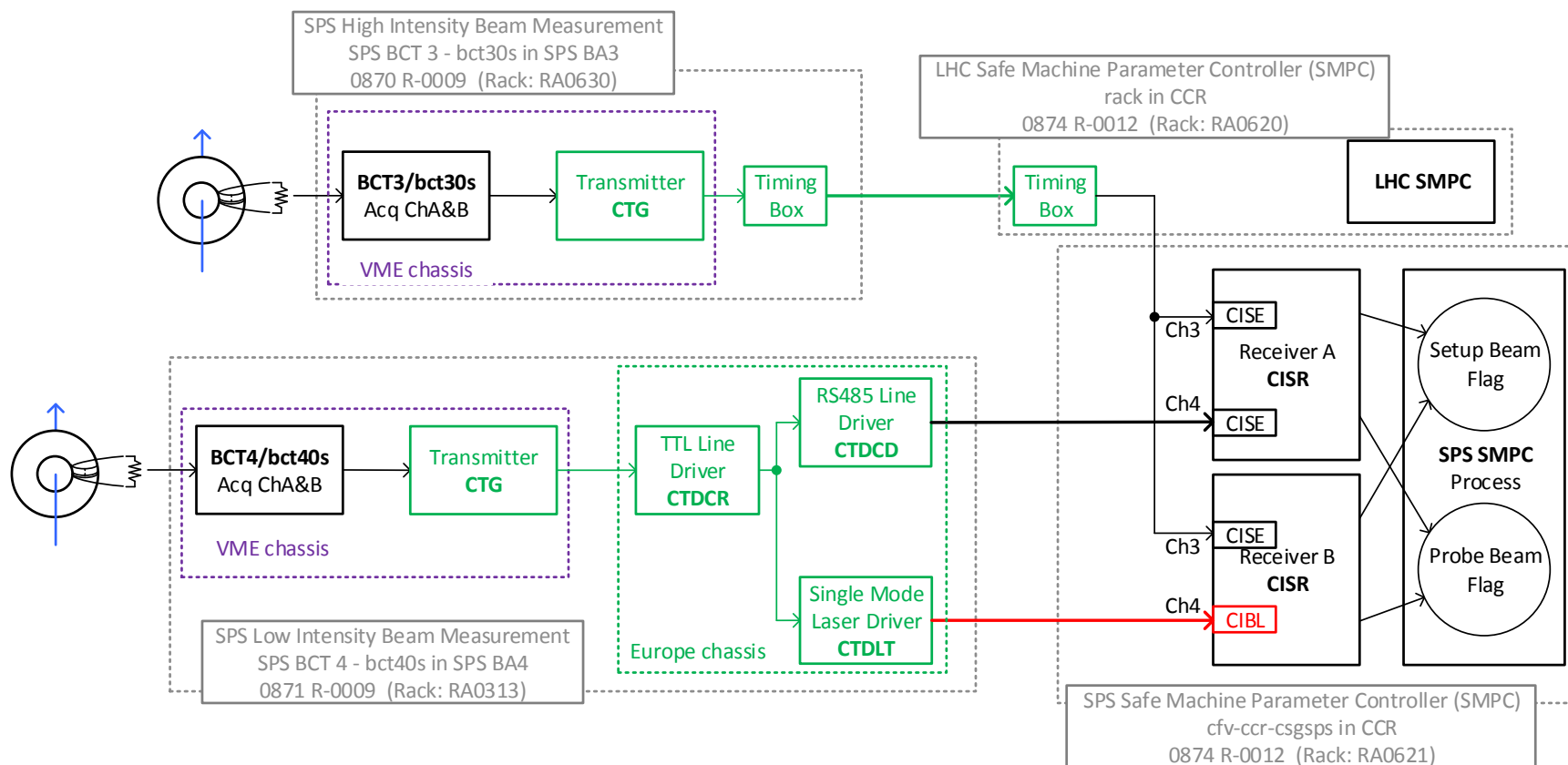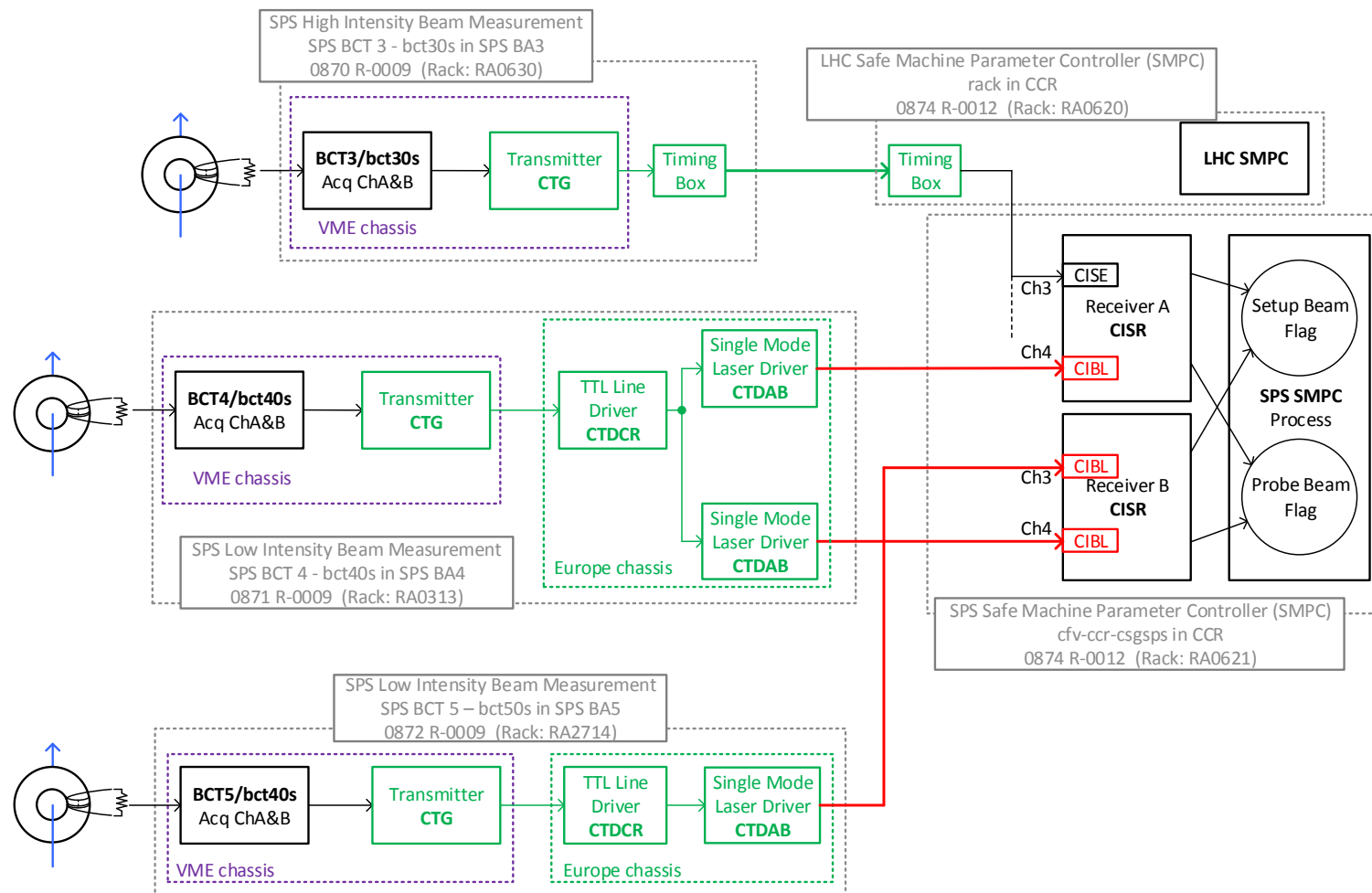P. Odier

LHC BCTDC links to SMP in 2017

Summary of changes - SPS

- **No changes on firmware/hardware**

- **New link from BCT5 in BA5 for high intensity beam** measurements (protons), 16 bit, 100Samples/s, rms noise ~ 1.5E9 charges (see P. Odier – 141st MPP)

- **Copper link from BCT4 has been replaced by optical link** (CTDAB and CIBL)

SPS BCTDC links to SMP in 2016

SPS BCTDC links to SMP in 2017

Machine checkout

- Commissioning steps defined on **MPS document** (EDMS 1112187)

- **LHC**
  - Verification of **intensity reception** (especially from new 24-bit BCTDC during/after calibration)
  - Verification of **energy reception** with a ramp from injection to physics (no circulating beam) **and flags generation and transmission**
  - Verification of **SFs and broadcast to GMT**

- **SPS**
  - Verification of **intensity reception** (especially from new BCT5 and new BCT4 optical channel), **flags generation** (SBF and PBF) **and transmission** to EXT BICs and SPS Timing
  - Verification of **energy reception**, **flags generation** (E_LHC_FLAG, E_AWAKE_FLAG, E_HIRADMAT_FLAG) **and transmission** to extraction BICs and LHC timing

Commissioning with beam

- **LHC**
  - **Verification of BPF** reception and transmission for both beams
  - **Verification of SBF equations** (NORMAL, RESTRICTED, BEAM_SETUP & IONS) for different intensities and energies, and SBF transmission
  - **Verification of Moveable Devices and STable Beam flag** generation and transmission
  - **Cross checker** validation

- **SPS**
  - Verify correct **flag generation (PBF and SBF) and transmission to EXT BICs and GMT (for I <1E11 p+, >1e11p+, >5E11 p+)**

SPARE SLIDES

SPS PBF, SBF, ENERGY

LHC SBF

LHC STB & Moveable devices