

LHC BCTDC Layout proposal for 2016

And implications on the SMP LHC

Stéphane Gabourin

TE/MPE - Machine Interlocks

On behalf of BE/BI

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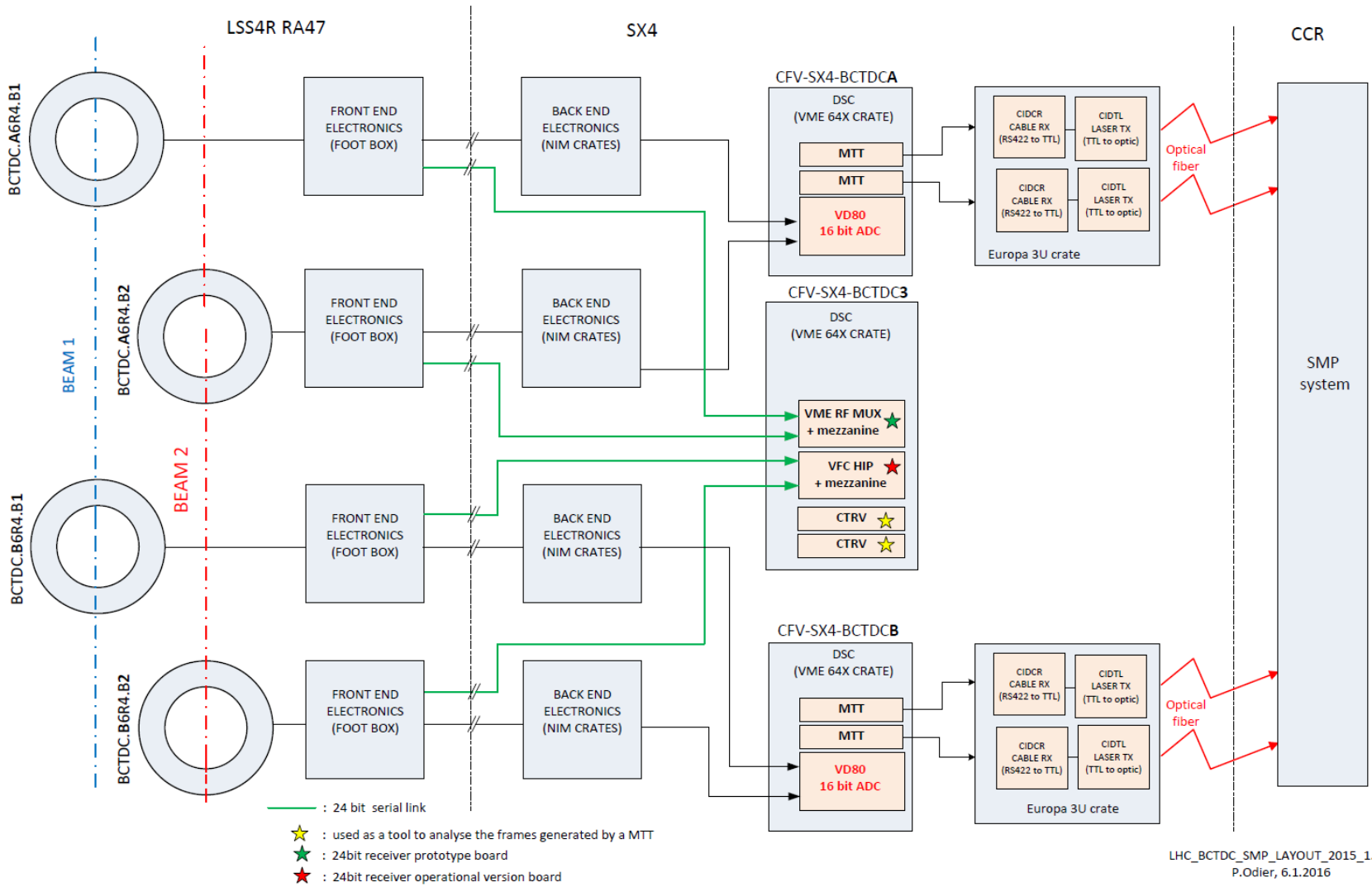
LHC BCTDC Layout proposal

- The LHC BCTDC units provide LHC beam intensities to the SMP LHC. These intensities are used for the calculation of the LHC Setup Beam Flag and forwarded on the LHC Timing system.
- Actually 2 BCTDC, "A" and "B", using 16-bits ADC (VD 80), feed redundantly the SMP:
 - BCTDC A provides Beam-1A and Beam-2A intensities
 - BCTDC B provides Beam-1B and Beam-2B intensities
- A "C" system was installed to test 24-bit ADC with 1 prototype (VME RF MUX) and 1 operational module (VFC HIP)
- The C system treats the 4 intensities Beam-1A, Beam-1B, Beam-2A and Beam-2B.



LHC BCTDC 2015 installation

LHC BCTDC layout in 2015



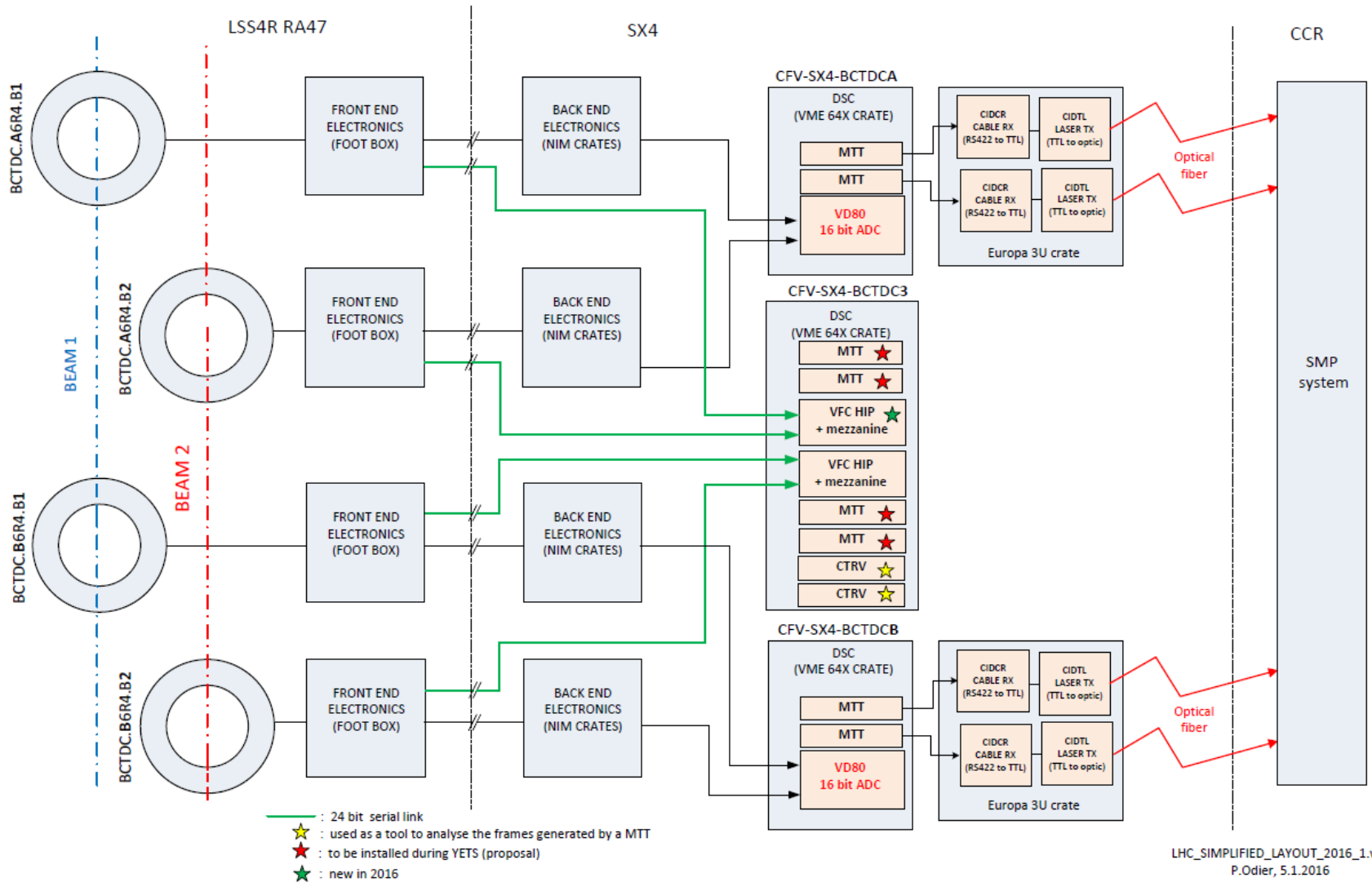
Courtesy: Patrick Odier



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- In 2016, the “C” system will be equipped with 2 operational module VFC HIP and new version of MTT (to send intensity frames using the timing standard).

LHC BCTDC layout in 2016



LHC_SIMPLIFIED_LAYOUT_2016_1.vsd
P.Odier, 5.1.2016

Courtesy: Patrick Odier

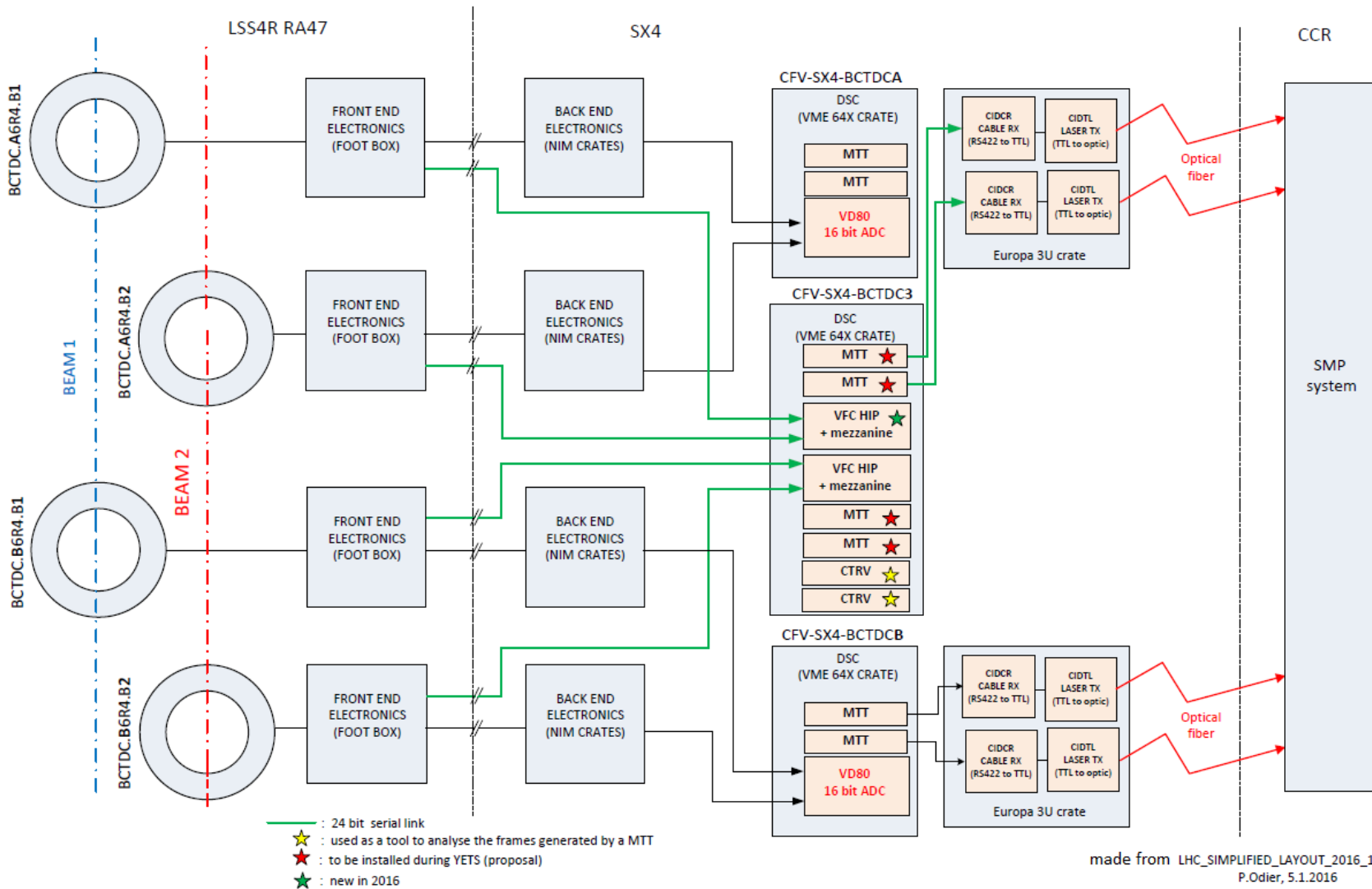


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- In 2016, the “C” system will be equipped with 2 operational module VFC HIP and new version of MTT (to send intensity frames using the timing standard).
- After full validation of the VFC HIP, we will take the decision on the different steps to connect the C system on the SMP.
- A solution could be to plug the C system instead of the A one to keep 2 full redundant chains of electronics and test the new system.

LHC BCTDC possible installation step in 2016

LHC BCTDC layout in 2016



made from LHC_SIMPLIFIED_LAYOUT_2016_1.vsd
P.Odier, 5.1.2016



LHC BCTDC Layout proposal

- Independently of the SMP, the C system could be used by the Control Room to display intensity values
- No change has to be realised in the SMP implementation*. The intensities are provided using the same format and same unit.
- When the C system will replace the A system to feed the SMP, the link will be fully tested**.
- This may be foreseen during a technical stop of this year.
- If any problem is detected, we can switch back on the A system.
- The final implementation is to replace the 16-bits ADC modules (VD 80) by the 24-bits ADC modules (VFC HIP) in the A and B systems.
- This should take place during the EYETS 2016

* To be confirmed if the new MTT keeps the same protocol than the current one

** In particular: Intensity values and units, reception rate and MTT change behaviour