



BTV / MTV @ CERN

Responsibilities over the last years

BTV SPS/LHC hardware responsible: Ferioli Gianfranco

BTV SPS/LHC mechanics responsible: Fischer Claude

MTV PS hardware responsible: Maccaferri Remo, Stephane Burger

MTV PS mechanics responsible: Bal Cathelijne

B D I DAY

A large, stylized graphic of a balance scale is positioned on the right side of the slide. The scale is tilted, with the right pan being lower than the left pan. The text 'Beam Diagnostic Instrumentation DAY' is overlaid on the scale's beam and pans.

14th of January 2004

S.Burger

AB/BDI/PM

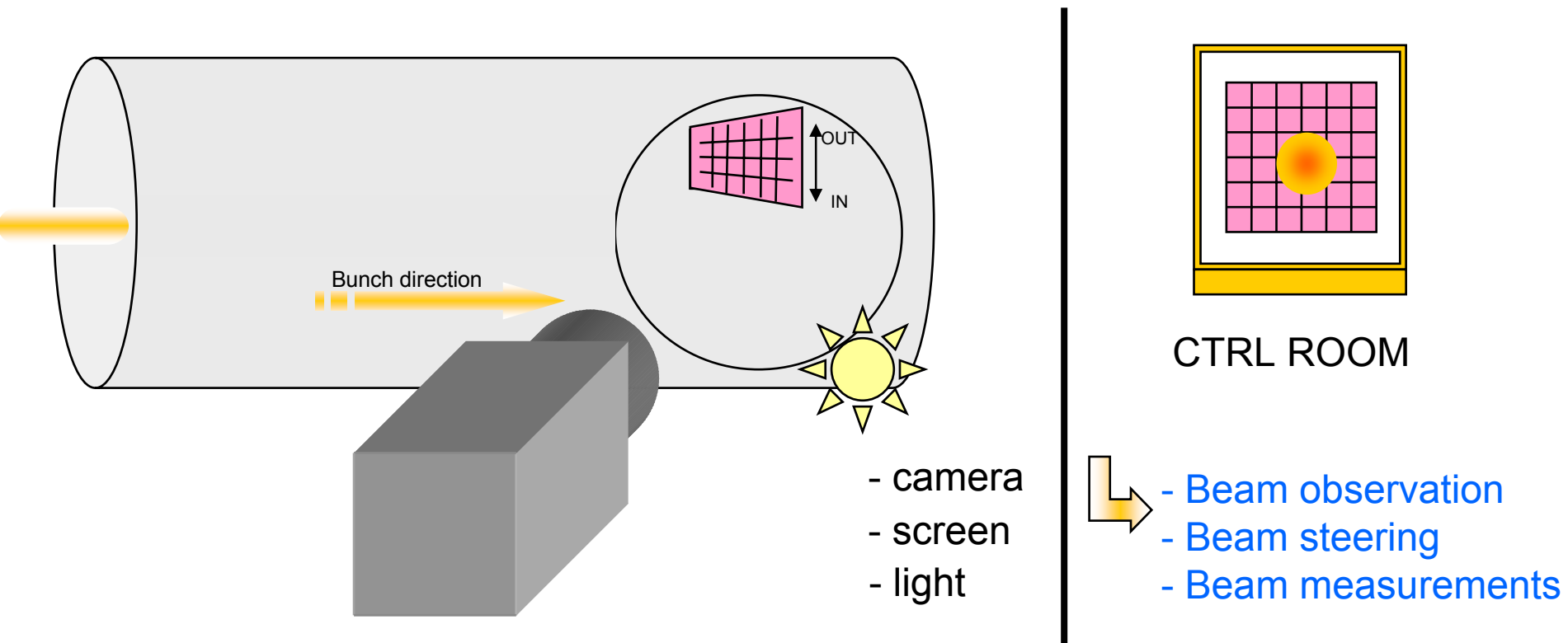
SUMMARY

- What is BTV / MTV system ?
- System around the PS – SPS – **upcoming LHC**
- Why a **MTV consolidation for the PS complex** ?
- AB reorganisation → **single standard system**
- Budget and planning of the MTV consolidation
- Planning for the LHC BTV
- Conclusion

What is the **BTV** system ? **MTV**

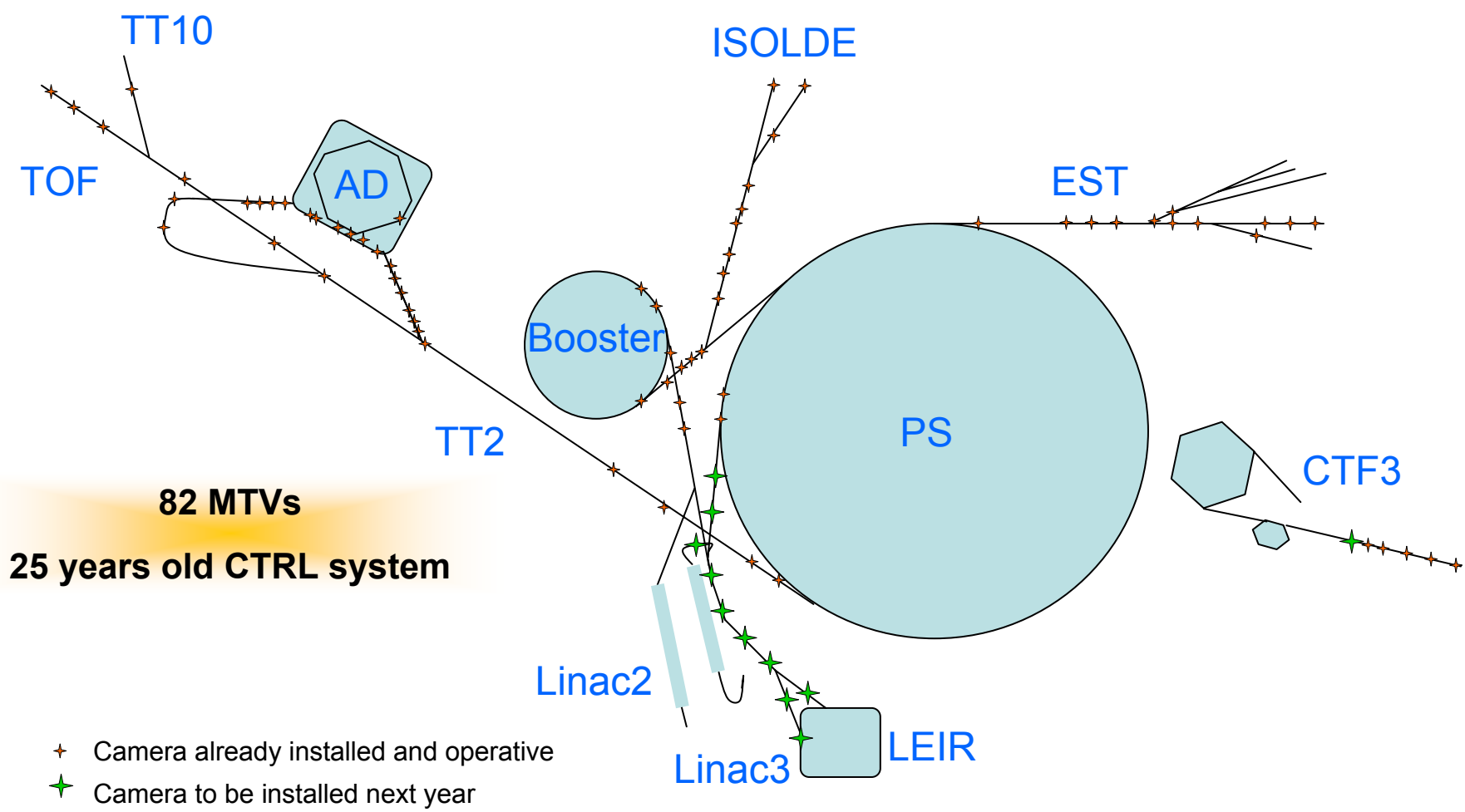
TV system →

{ BTV = Beam TV. Name used for the SPS and the LHC.
MTV = Monitor TV. Name used for the PS complex.



Hardware CTRL

DISTRIBUTION of the MTV in the PS complex



PICTURES

Actual Camera / Screen Chain Layout in the PS

CTF3, BOOSTER, AD, EAST HALL, TOF, LINAC, ISOLDE, TT2 (96 cameras)

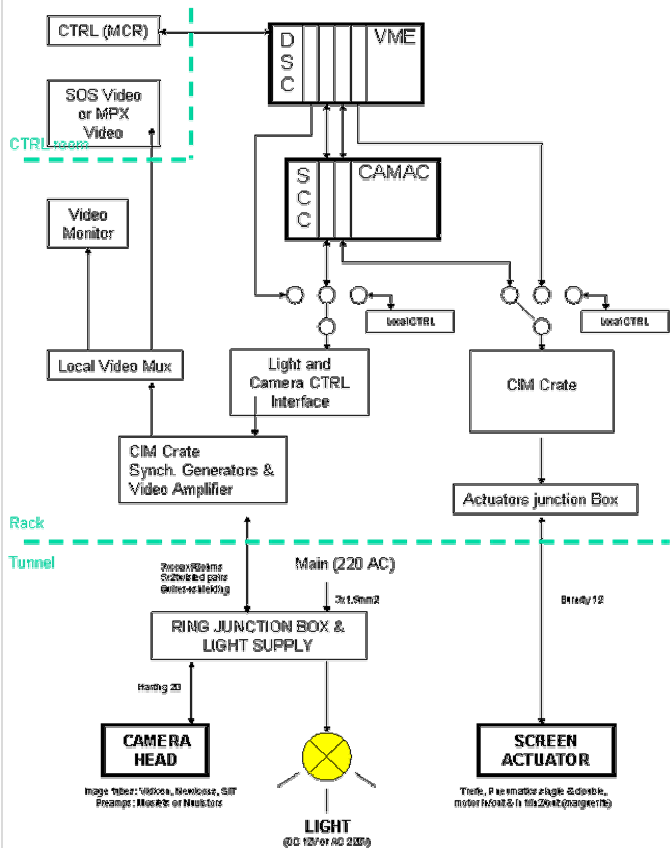
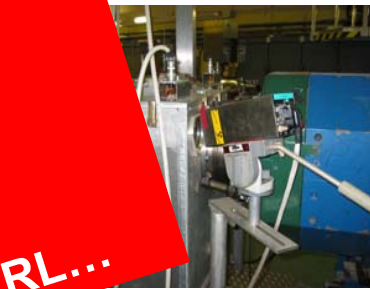
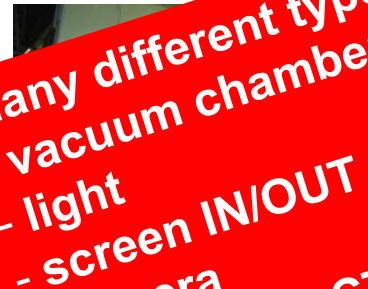
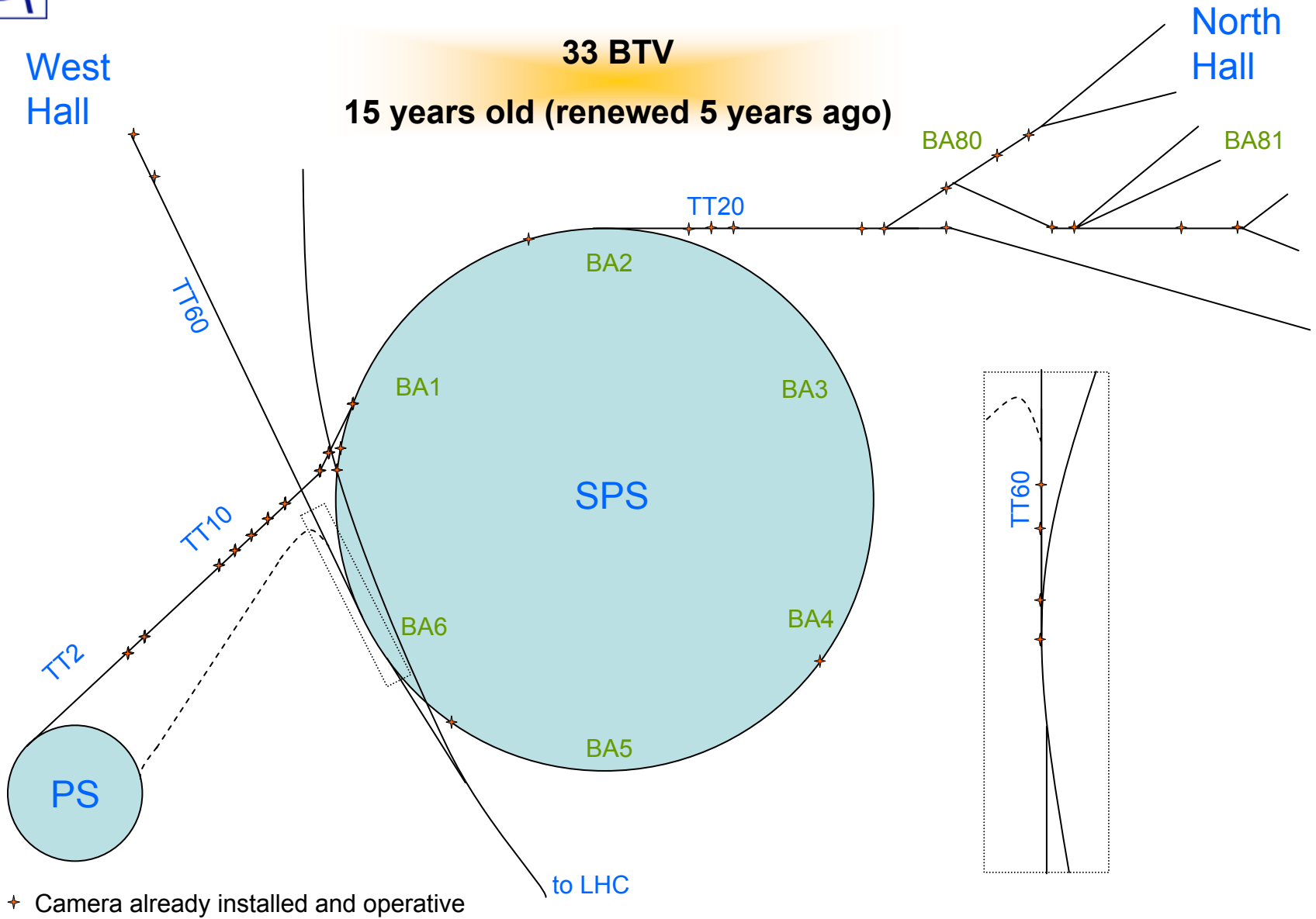


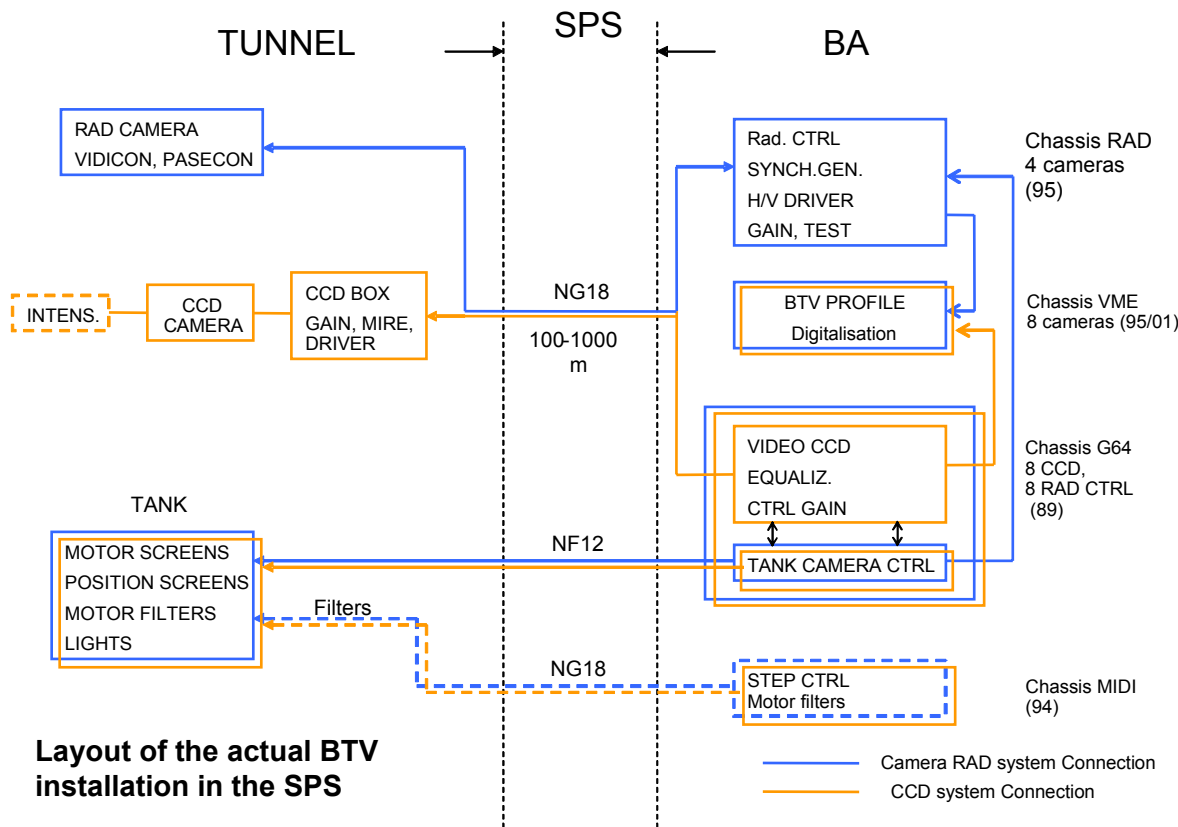
Figure 2: Actual Camera/ screen chain layout



Many different types
 - vacuum chamber
 - light
 - screen IN/OUT
 - camera
 - electronics CTRL...

DISTRIBUTION of the BTV on the SPS complex



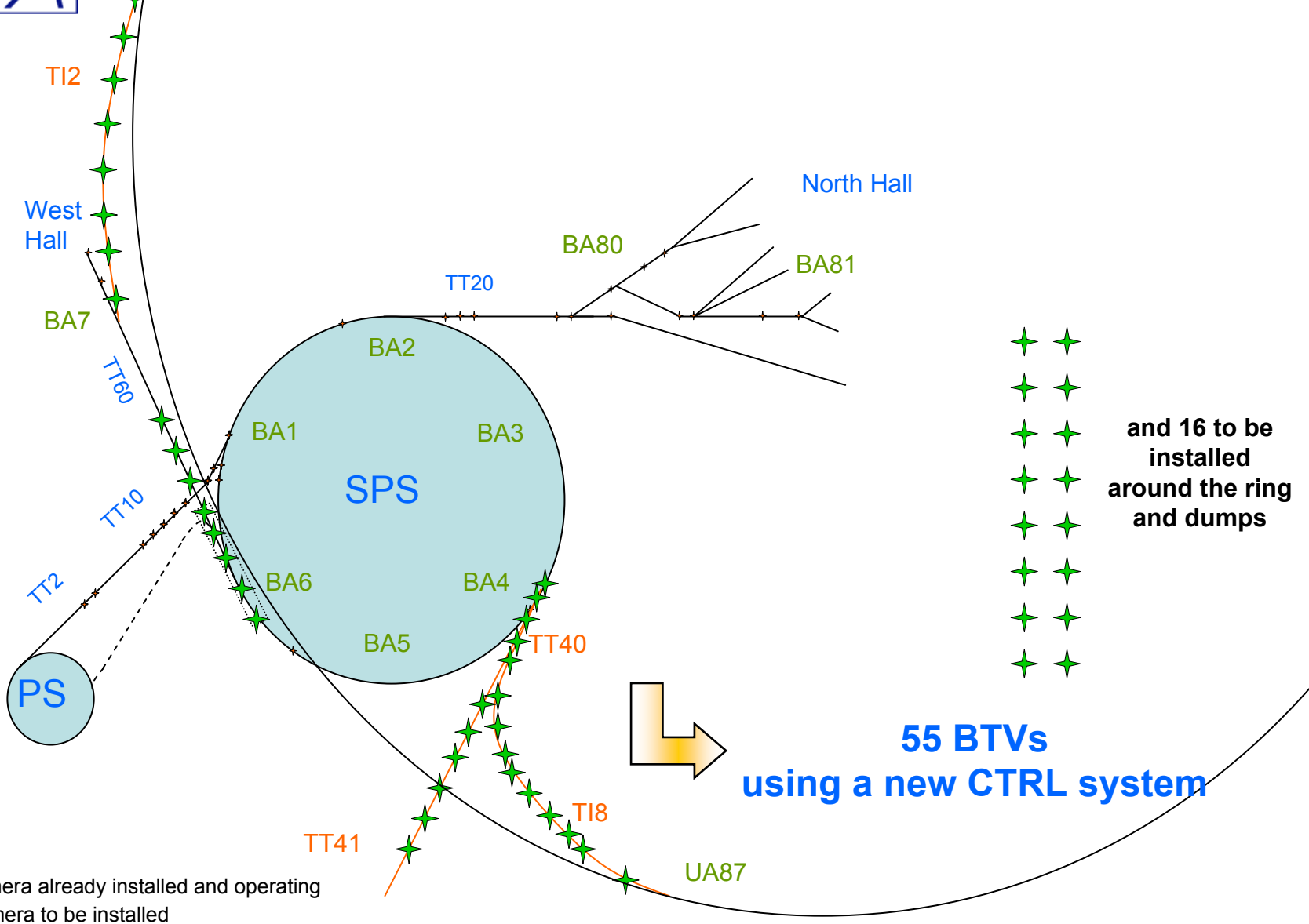


Layout of the actual BTV installation in the SPS



Mainly of the same type.
(chamber, IN/OUT, camera, light, electronics)

DISTRIBUTION of the BTV on the LHC complex





Why an MTV consolidation for the PS complex ?

- ageing
- numerous different hardware (cameras, IN/OUT actuators, lights)
→ **different electronics CTRL**
- accumulation of modifications
- obsolescence of components
- manpower shortage

The system is getting less and less reliable and difficult to maintain.

→ **The availability of the present system can not be ensured**



AB reorganisation opportunity

WE NEED:

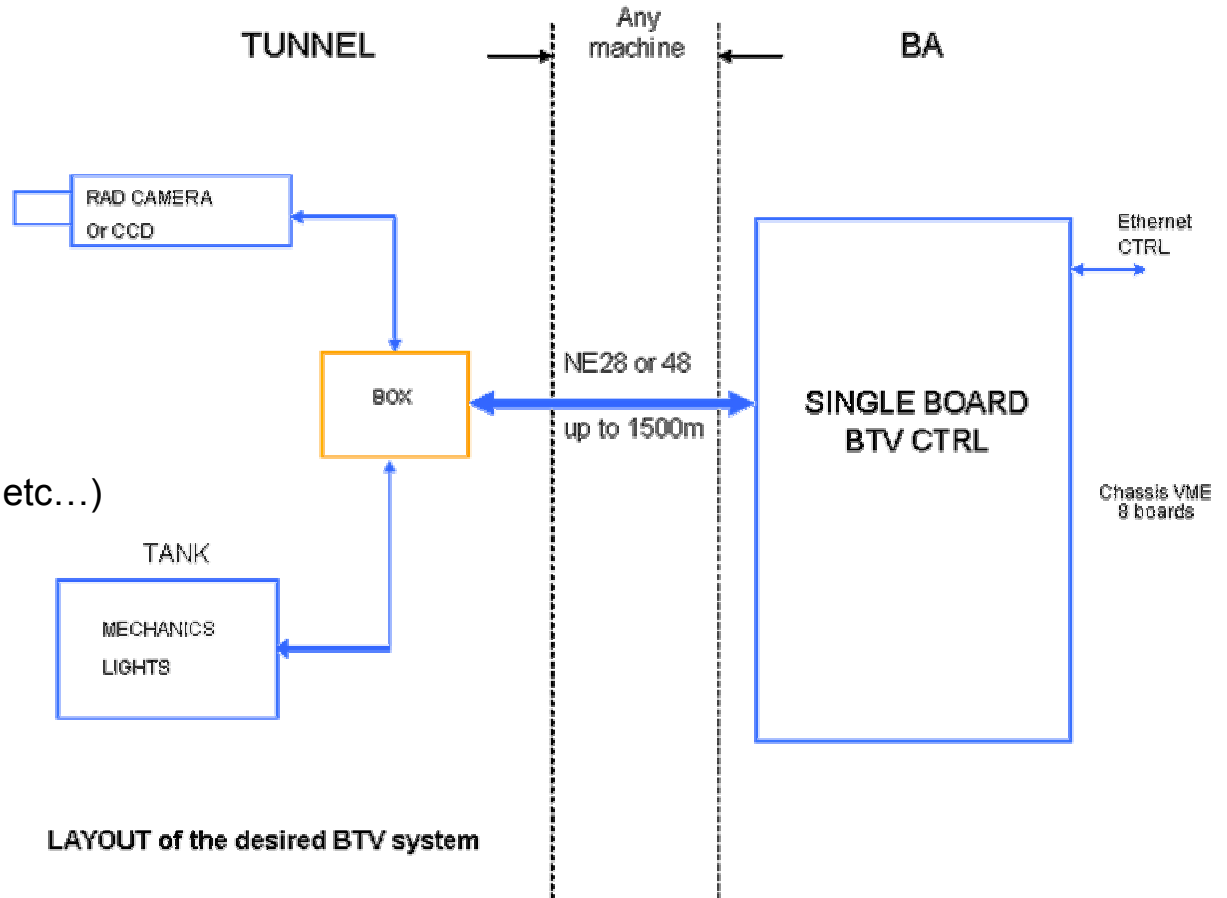
- a new CTRL system for the PS consolidation
- a new CTRL system for the upcoming LHC

WE WILL HAVE

- a NEW SINGLE CTRL SYSTEM (that can be deployed in all machines, including the SPS in the medium term)

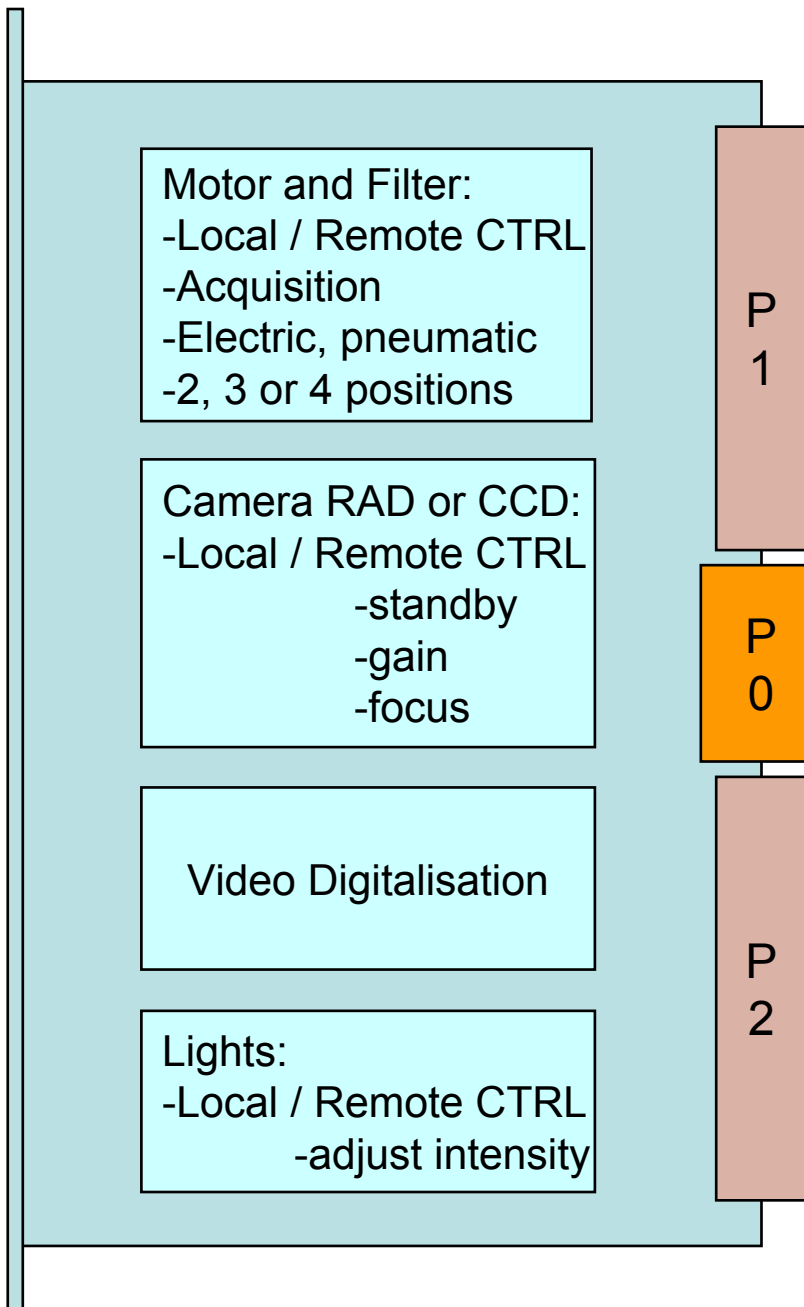
New BTV/MTV system CTRL layout

- Single board CTRL
- Simpler (1 cable, no interface, etc...)





What we want to have



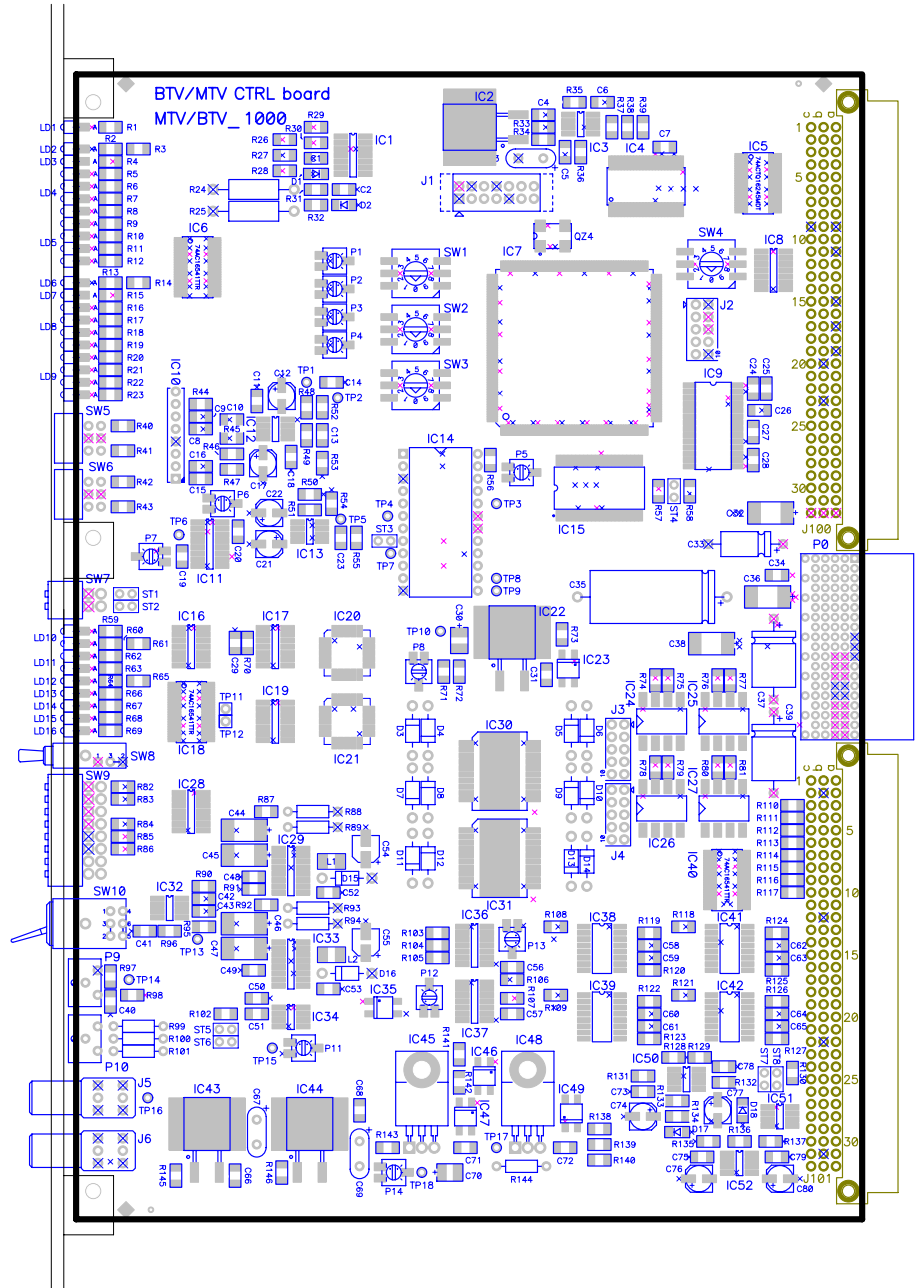
with the help of a programmable logic chip ALTERA

→ all on one **single** VME board



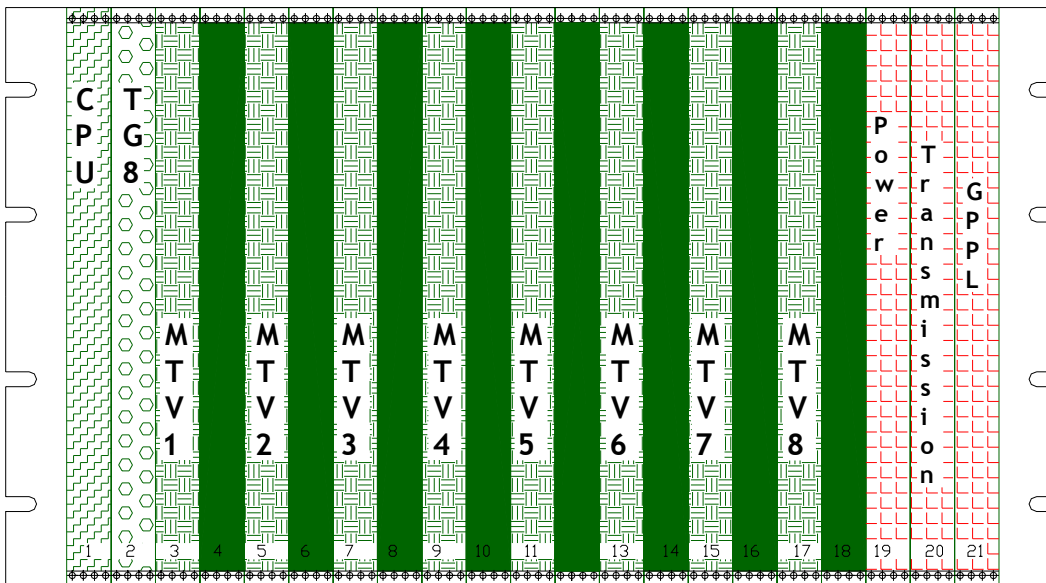
MTV/BTV VME board prototype

VME MTV/BTV BOARD CTRL	
○ DTACK	
Loc/Rem Busy Out	MOTOR
1 2 3 Out	CTRL ACQ
1 2 3	
Loc/Rem Busy Out	FILTER
1 2 3 Out	CTRL ACQ
1 2 3	
Motor position	Motor position
Filter position	Filter position
Loc/Rem	Motor Filter
RAD ON RAD stby Gain 1 Gain 2 Zoom CCD ON Pressync Spare 1 Spare 2	CAMERA
RAD ON	
stby Gain1 Gain2 Zoom CCD	
Loc/ Rem	LIGHTS
	Adjust
	RAD Focus
1 2	
3 4	
1 Comp Video 2 Comp synch 3 Ext acq trigger 4 Spare	
AB/BI	



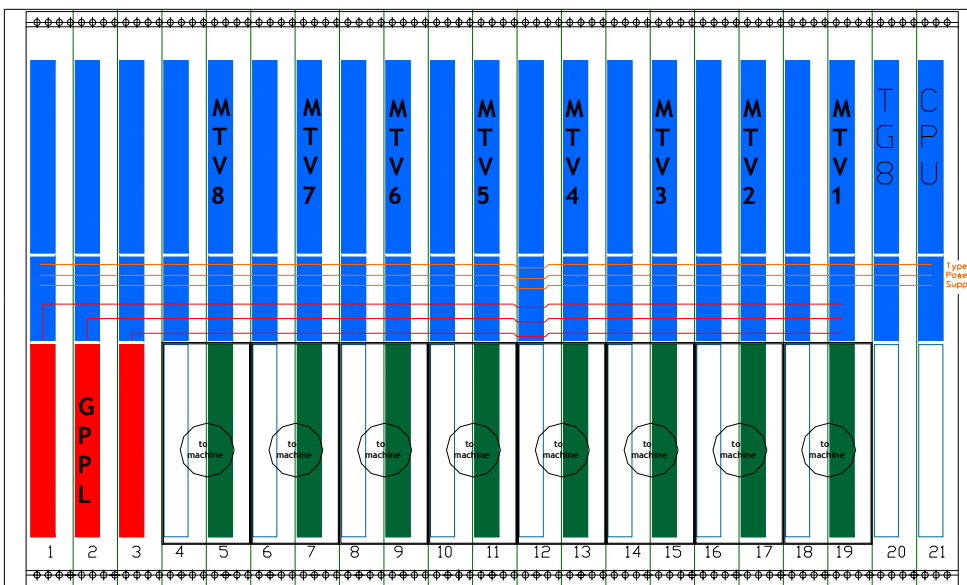


Layout of the new VME 64x crate



Front view

- VME 64x type B (BDI specs)
- 1 crate → 8 BTV CTRL



Rear view



Budget for the MTV consolidation on the PS complex

Estimated Costs

To replace all the actual PS complex camera/actuators chains we need:

13 fully equipped LHC type VME64x crates	(20KCHF ea)	260
150 VME camera control cards	(2KCHF ea)	300
100 Modified Head	(1.5KCHF ea)	150
Mechanisms	(various)	50

TOTAL

760 kCHF



Planning of the MTV consolidation on the PS complex

1st quarter 2004

Final design of VME board and camera head printed board.
First tests on prototypes

3rd quarter 2004

Tests finished with software application

4th quarter 2004

First installation and commissioning on 11 new systems on LEIR

2005/2006/2007?

PS consolidation (PS, Booster, TT2, ISOLDE, TOF, AD and East Hall)

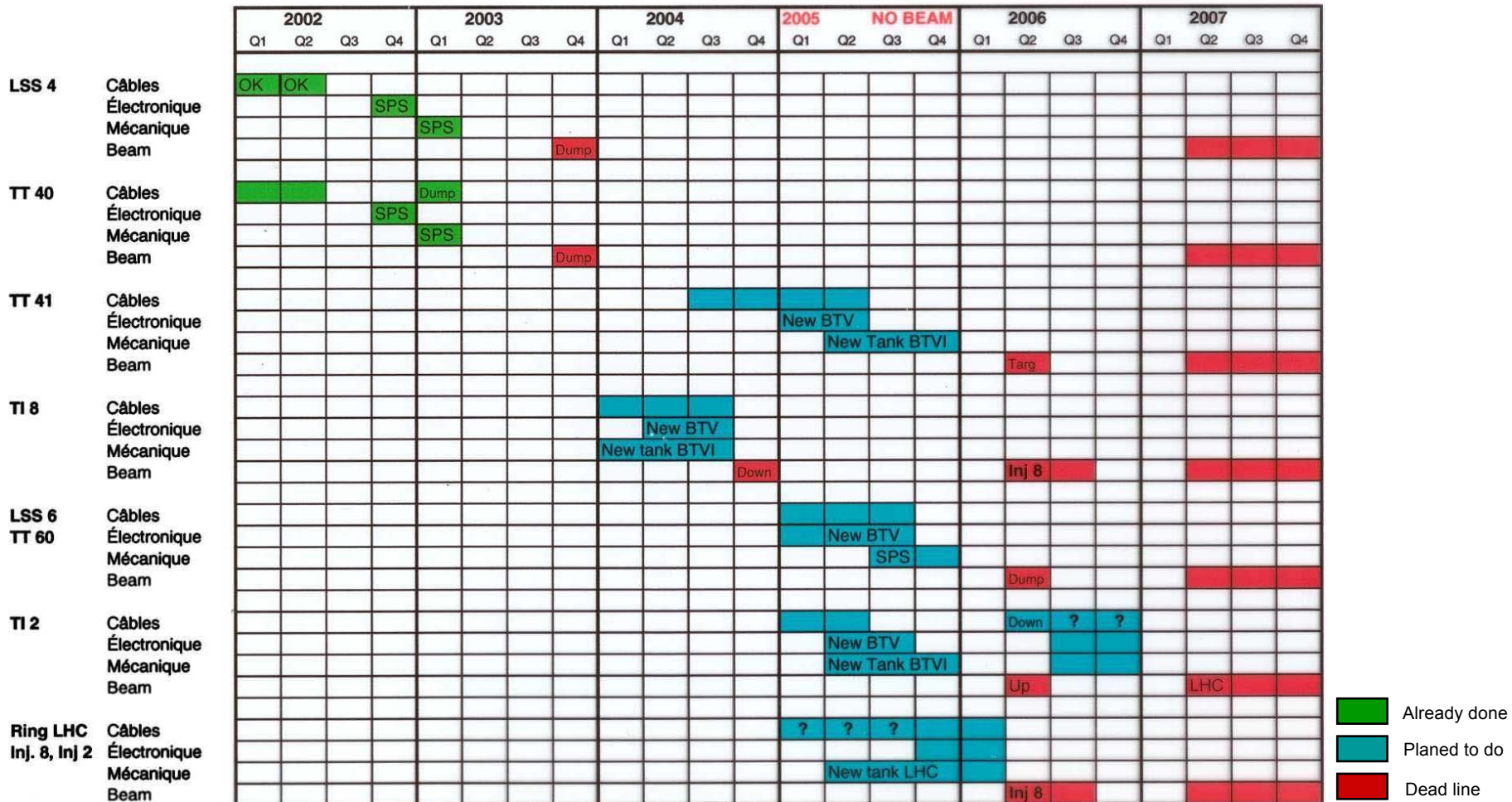


Planning of the BTV project on the LHC + transfer lines

LTI infrastr.

1-Apr-03

Installation BTV Profile and Beam Loss monitors



- Already done
- Plened to do
- Dead line



CONCLUSION

- Common solution found
- Development is done

- Now TESTS and FINALISATION have to be done

- Installation within the next 3 years will be an important part of the whole project with the 220 systems to replace or install....

ACKNOWLEDGEMENTS...

... to all people who are (were) involved in this BTV/MTV project (development and maintenance), and particularly:

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Philippe Lavanchy
Philippe Marchon