



# Status of the PDB at Milan - Addendum

M. Citterio, M. Lazzaroni\*, S. Latorre

\*Corresponding author

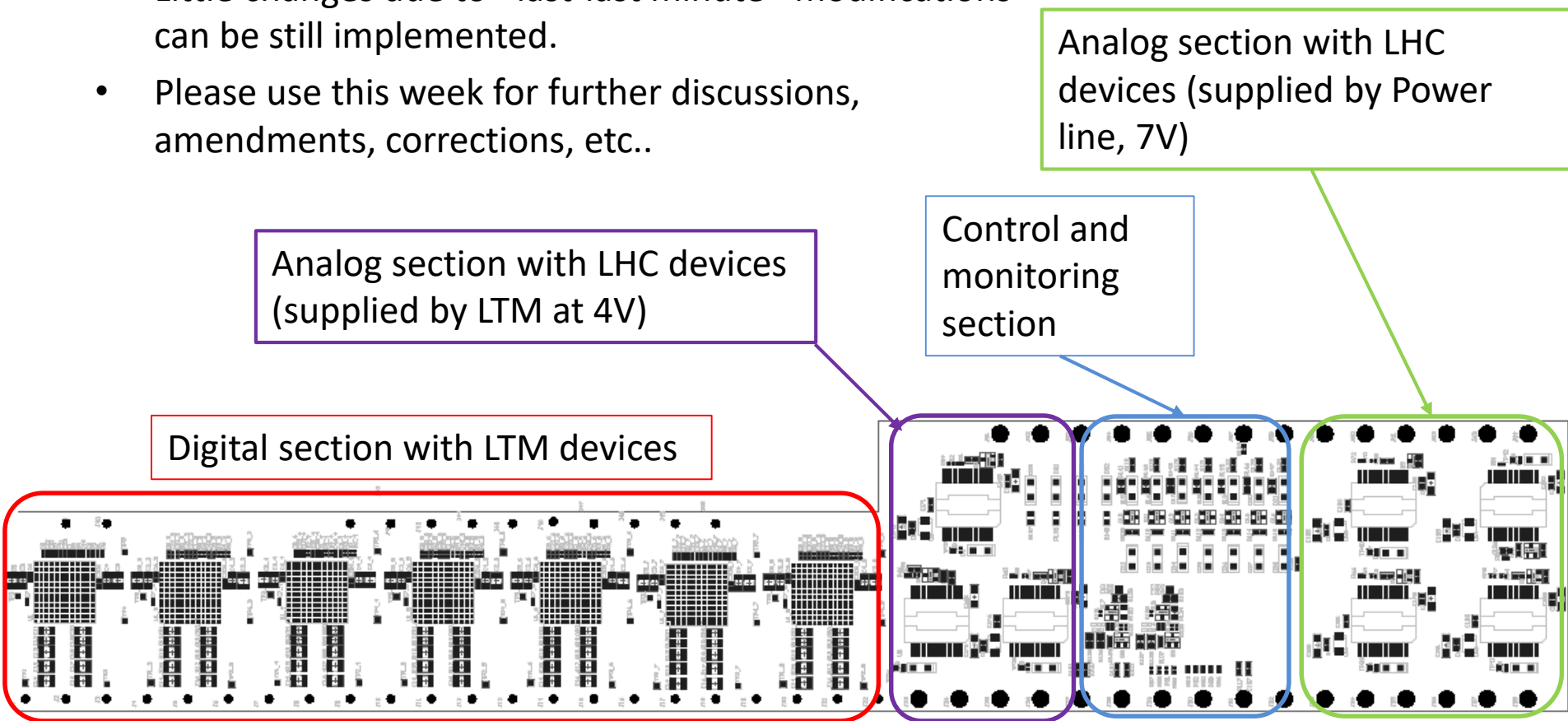


# Schematic diagram

- The schematic diagram is complete.
- Few details are different if compared with the solution adopted on the LTDB
- See the next slides for further details.

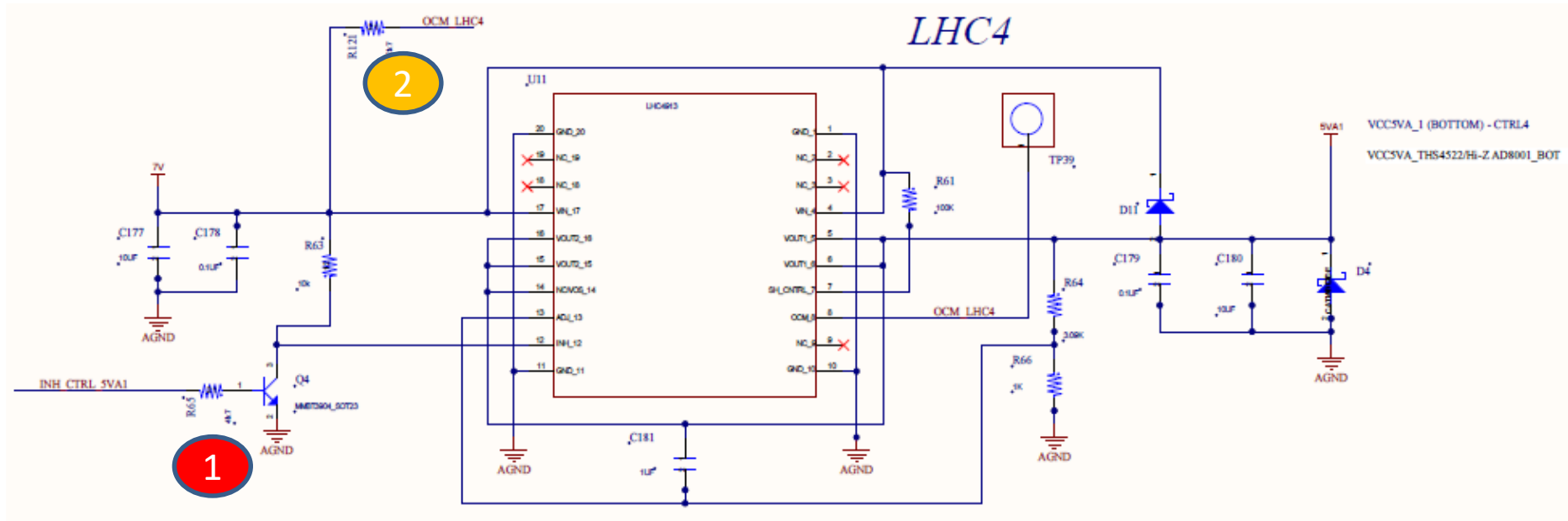
# PDB Layout

- Placement of the devices is practically finished
- Little changes due to «last-last minute» modifications can be still implemented.
- Please use this week for further discussions, amendments, corrections, etc..



# LHC section

- 1 Transistors: agreed in previous discussions → MMBT3904 (VCE0 = 40V) → able to operate also in Phase 2
- 2 Resistor added by Hervé in the LHC Monitor circuit (see the next slide for complete LHC monitor circuit).



# LHC Monitor: proposal

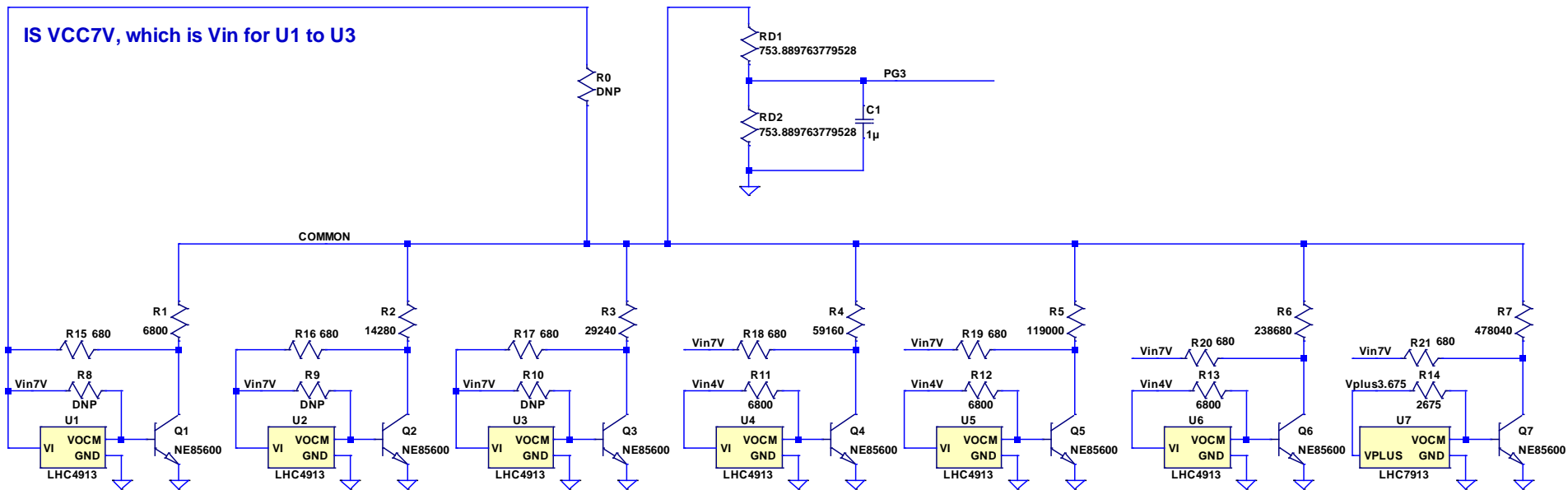
Proposed by Hervé.

Being the circuit “new”, we would like to investigate also other solutions and topologies by adding additional components as shown in the following slide.

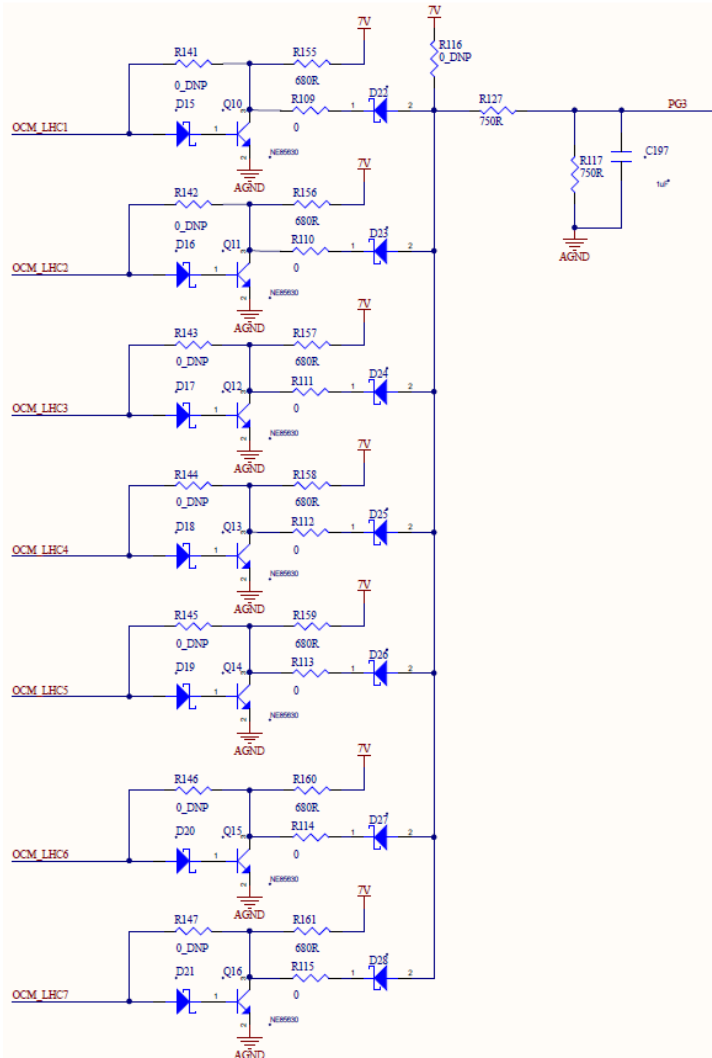
Some resistor values should be confirmed by Hervé (no problem for routing, only for BoM)

## THE CONSIDERED REFERENCE VOLTAGE (THIS NODE)

IS VCC7V, which is  $V_{in}$  for U1 to U3



# LHC Monitor: BJT Selection



NPN NE85630 Transistor: type suggested by Hervé (e-mail, 2017-02-08)

Please note that:

- NE85630 has  $V_{CE0} = 12\text{ V}$
- MMBT3904 has  $V_{CE0} = 40\text{ V}$
- *It could be not adequate for Phase II if input voltage exceeds 12 V*
- *The footprints of the two transistors are different → the devices are not immediately pin-to-pin compatible.*

*After discussion we plan to use MMBT3904 (see e-mail by Philippe, 2017-02-20 and 2017-02-21)*

*Motivation:*

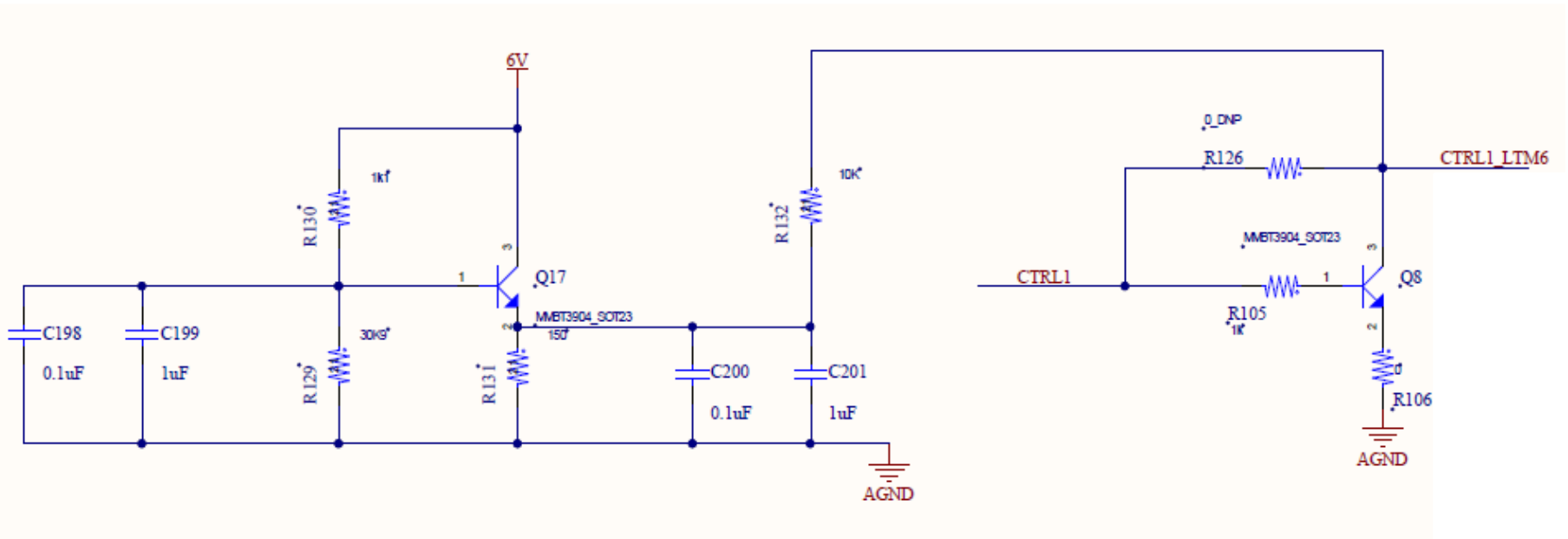
- *This transistor is currently used on the retrofitted MDI LVPS, and also ELMB adapter board to control Wiener LVPS (see e-mail by Chen, 2017-02-21)*
- *A further check with Jim Kierstead about the existence of a record of radiation test results is ongoing. (see e-mail by Chen, 2017-02-21)*

# LTM control circuit (example)

Control of the LTM 4619 devices is obtained as agreed in last December.

We checked that a similar circuit is present of the LTDB schematic (Hao, LTDB\_V3\_20170130.PDF).

In this circuit we are using MMBT3904 (VCE0 = 40V) transistor, as agreed.



# Status of the purchase order of the PDB

- Manufacturer selected: ARTEL S.r.L., Civitella della Chiana, Arezzo, Tuscany, Italy.
- Purchase order placed
  - based on general characteristics of the board, number of layers, dimensions and shape of the board, type of components .....
- All “critical” components already in our hands:
  - LTM4619 → purchased
  - LHC4913 and LHC7913 → by INFN stock
  - pins
- Other “common” components provided by assembler
  - easy to acquire (RS Components, DigiKey, Mouser, Farnell etc...)





# Conclusions



Road map is:

1. Completion of board routing: this and the next week
2. BoM send to manufacturer: next week
3. Complete construction “package” send to manufacturer before LAr week
4. Two weeks, following point 3, for board manufacturer.