

# CMS Week - TECHNICAL BOARD

- ◆ **Status of cables**
- ◆ **Plan for the installation of the MU Barrel cables**  
*(from last CMS week's TB)*
- ◆ **Routing of cables on detectors**
- ◆ **Status of cutting lengths**

# Status of cables - definition and procurement

- The status is summarized by the document  
“*MB and RB UXC55's CABLES STATUS*”
- Still open
  - **MB.LV.mc:** *C. Willmott* **defined the LV cable.**  
He has to define the connector at detector side in order to prepare the PRR.
  - **MB.CA.tr & MB.CA.ro:** **No progress was reported.**  
*F. Odorici* is still testing some prototypes in Bologna.
  - **RB.CA.sgn:** (~75Km, ~200K euro)  
A. Ranieri received a new sample from Novacavi; testing is in progress.  
He said (26.04.04) that he will release technical specification next week.
  - Alignment: no **ALIGNMENT** cables was specified for PRR.  
Progress in routing of Link system.

# MB and RB UXC55's CABLES STATUS - short description *(NOTE: No Alignment cables was specified up to now)*

CABLE NAME	NR. CABLES	TOT. LENGTH	TECHNICAL STATUS	LOGICAL ROUTING	CUTTING LENGTHS	PRR STATUS	SUPPLIER AND PRODUCTION STATUS OF RAW CABLE	CABLE COULD BE BOUGHT THROUGH
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## LV cables – inner cables-tray

MB.LV.mc	250 + 20 SPARES	4.3 KM	CABLE DEFINED, WAITING FOR CONNECTORS	DEFINED	TO BE DONE	CABLE IS DEFINED! WAITING THE OTHERS DOCUMENTS FROM RESPONSIBLE PERSON	NOVACAVI /	
MB.LV.fe	250 + 20 SPARES	4.3 KM	DEFINED	DEFINED	TO BE DONE	It's almost done. The PRR will be approved as soon as we will get the INTERCOND's safety docs.	INTERCOND / DELIVERED AT CERN	NO
RB.LV.fe-8, RB.LV.fe-12	370 + 40 SPARES	6.6 KM	DEFINED	DEFINED	TO BE DONE	APPROVED by the Committee	NOVACAVI / IN PRODUCTION	NO

## HV cables – central cables-tray

MB.HV	680 + 20 SPARES	11.2 KM	DEFINED	DEFINED	~ 85 % DONE, OTHERS IN PROGRESS	APPROVED by the Committee	KERPEN / CUTTING AND PUTTING CONNECTORS	NO
RB.HV	480 + 20 SPARES	11 KM	DEFINED	DEFINED	TO BE DONE (NB UP TO THE FEET PATCH PANELS.)	APPROVED by the Committee	NOVACAVI / IN PRODUCTION	NO

## Signal & Optical cables – outer cables-tray

MB.OF.sc	250 + 20 SPARES	4.3 KM	DEFINED	DEFINED	TO BE DONE	APPROVED by the Committee	UNIFIBRE / NEEDS LENGTHS BEFORE ORDER	NO
MB.OF.ttc-mc	250 + 20 SPARES	4.3 KM	DEFINED	DEFINED	TO BE DONE	WORKING ON	CERN / AT CERN STORE	YES, ~ 25000 CHF
MB.CA.sc	260 + 10 SPARES	1.8 KM	DEFINED	DEFINED	TO BE DONE	WORKING ON	CERN / AT CERN STORE	YES, ~ 2500 CHF
MB.CA.veto	250 + 20 SPARES	4.3 KM	DEFINED	DEFINED	TO BE DONE	WORKING ON	CERN / AT CERN STORE	YES, ~ 15000 CHF
MB.CA.tr, MB.CA.ro	1000 + 20 SPARES	16.3 KM	UNDER TEST	DEFINED	TO BE DONE	WAITING FULL DOCUMENTATION FROM RESPONSIBLE PERSON		
RB.CA.t-sens, RB.CA.dcs-7, RB.CA.dcs-12	680 + 60 SPARES	12 KM	DEFINED	DEFINED	TO BE DONE	t-sens: READY FOR APPROVAL others: WORKING ON	CERN / AT CERN STORE	YES, ~ 55000 CHF
RB.CA.sgn	4720 + 60 SPARES	76.5 KM	UNDER TEST	DEFINED	TO BE DONE	WAITING FULL DOCUMENTATION FROM RESPONSIBLE PERSON	NOVACAVI /	~ 300 000 CHF

**TOTAL** FOR ALL 5 WHEELS **9440 + 157 KM**  
330 SPARES

~ 400 000 CHF

**No change** in the installation schedule proposed before the March '03 CMS Week by *A. Ball* and *G. Faber*. **I report the last one.**

## Plan for the installation of the MU Barrel cables - 1/2 -

- Previous schedule was in two phases
  - from **June '04** to **August '04**      2000 cables/50 days → 40 cables/day to be done by 4-5 persons.
  - from **November '04** to **March '05**      8000 cables/88 days → 100 cables/day to be done by 8-10 persons.
- The new schedule is 2 months delayed, it join the 1<sup>st</sup> and the 2<sup>nd</sup> installation, should be like:
  - from **Sept. '04** to **October '04**      2000 cables/50 days → 40 cables/day to be done by 4-5 persons.
  - from **November '04** to **March '05**      8000 cables/88 days → 100 cables/day to be done by 8-10 persons.

(no official document was released up to now)

Furthermore an **installation test** to be done as soon as possible **on a couple of sectors** is under discussion now, so our goals in cables procurement and production are

- Half of June '04: availability at CERN of a complete set of cables for 2 sector, ready to be installed.
- End of July '04: availability at CERN of a complete set of cables for 1 Wheel, ready to be installed
- Before Nov. '04: the rest of the cables for 4 Wheels, ready to be installed

# Plan for the installation of the MU Barrel cables - 2/2 -

## THERE ARE MANY OPEN QUESTIONS IN ORDER TO REACH THESE GOALS

- CABLES' DEFINITION not completely done
- TO COMPLETE THE PURCHASING
- TO PREPARE CUTTING LENGTHS IN DUE TIME !!!  
This is a challenge if we think about the actual man-power and rate of progress!  
>>**NEXT BOTTLENECK**<<
- PRODUCTION AND TESTING OF CABLES
- DELIVERING AT CERN

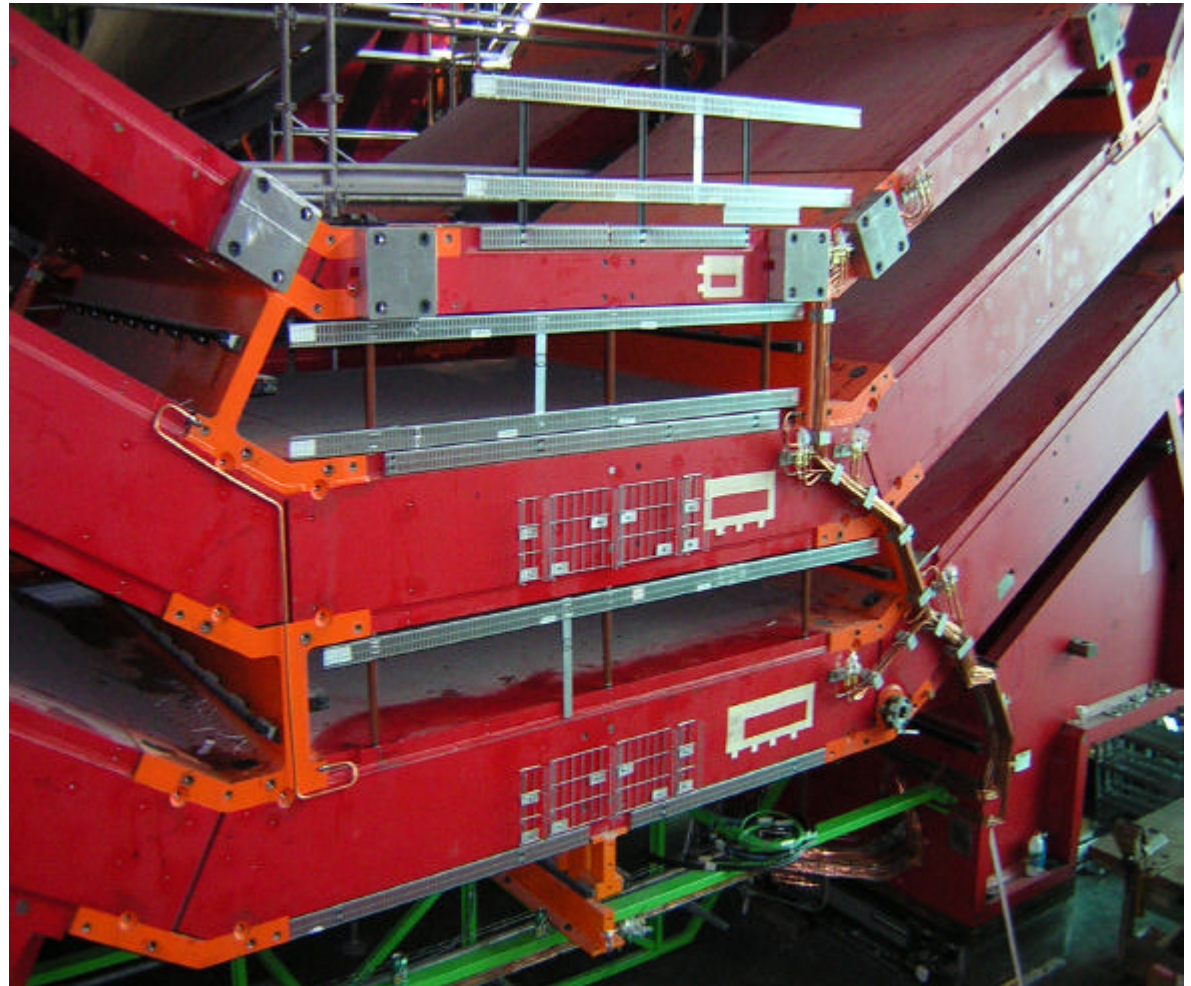
Furthermore, there are many mechanical parts which have to be designed, produced and installed before to install cables, i.e.

- **Support AL plate** for HV Junction box and minicrate LV Patch Connector
- **Cables-trays**: radial, peripheral, feet area ...
- **Tower's balconies**: Extra length support plate. Holes in order to reach racks from bottom.

# Routing of cables on detectors - 1/2 -

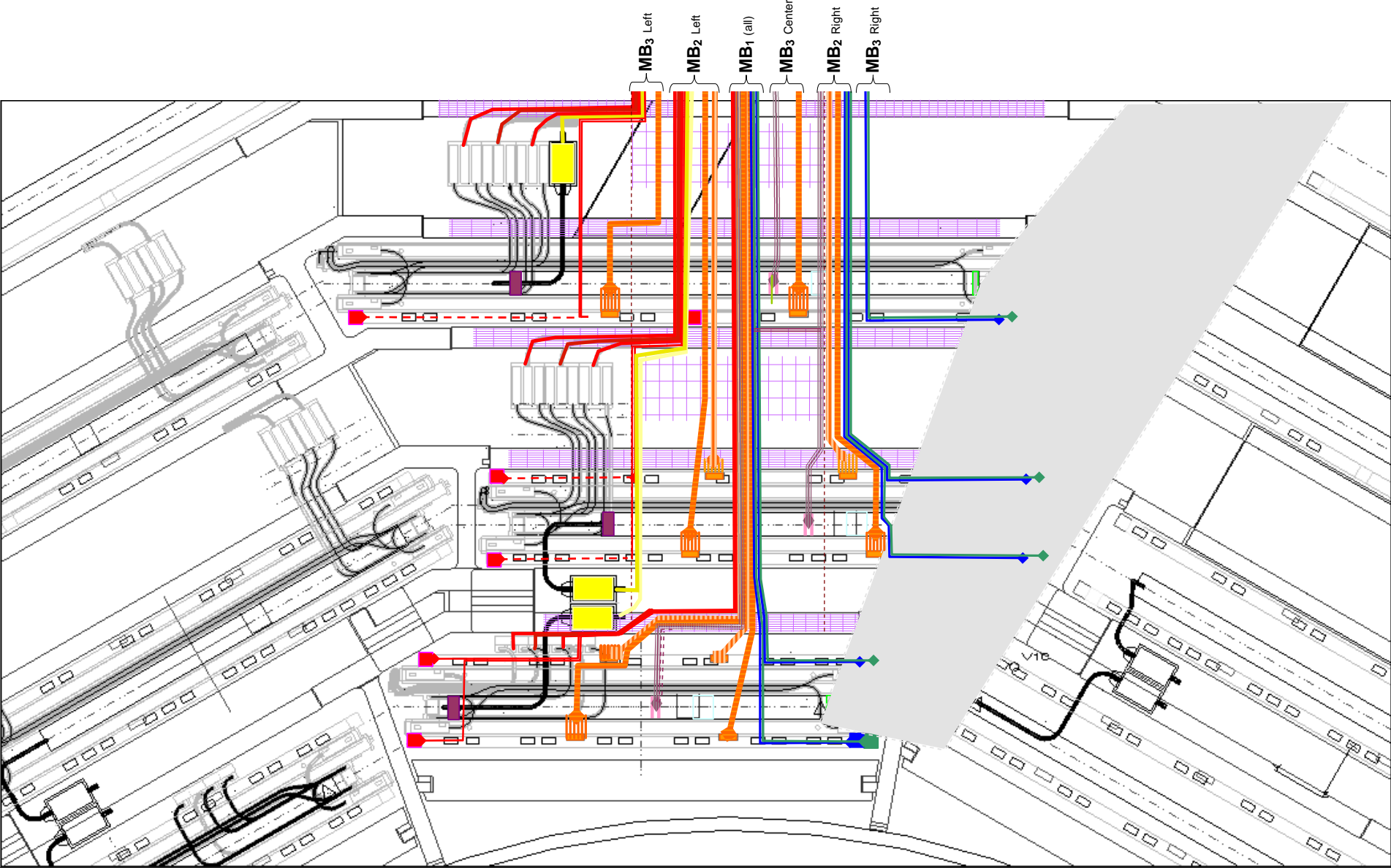
- **RADIAL LAYOUT** (*Dattola, Montecassiano, Passeggio, Roscilli, Wensveen*)

As requested by Integration Office, a layout 'by channel' for a sector (ZpL) has been proposed. Last week in P5, mechanical parts (dummy radial c-tray, dummy RPC ...) was mounted on W+2, sector 10 (not on sector 4 as proposed, due to necessity to go simpler). Dummy cables was also procured, cut and grouped by channels, ready to be installed. Starting position (connectors on RPCs, central hole on DT's carters, patch panel on Iron...) was identified and marked. **Next step** is the trial installation of the cables (excluded MB4 & RB4) as proposed.





**MB<sub>123</sub> and RB<sub>123</sub> ZpL's Radial Cabling by channels** (First proposal to be used in Wheel +2 Sector 4/10)



# Status of cutting lengths - 1/2 -

## HV gamma cables.

CAD analysis are almost done, we have information to release **all** cutting lengths soon.

Status of cutting lengths production:

- a batch was released in May '03 (**Domenico, Fabio**)  
It was prepared **136** of 272 for the top half (sector 1 to 6) of the 4 external wheels using EUCLID CAD models.  
These cables was produced in LNL.
- another batch was released in Feb. '04 (**Boki, Fabio, Gerard, Martinus, Stephane**)  
It was prepared **216** of 272 for the bottom half (sector 7 to 12) of the 4 external wheels (all the cables for these sectors excluded the MB4 ones).  
They was calculated as as sum of 3 parts
  - RADIAL by cad
  - PERIPHERAL by real measurement and taking decision on where to put cables.
  - BALCONY & RACK by estimations

These cables was produced.



## Status of cutting lengths - 2/2 -

- **Last batch** with **52** cutting lengths was released few days ago (cables for sector 4 of external wheels). These cables are under production now.

--> up to now **404/680** cutting lengths was released.

The remaining cutting lengths will be released soon. It needs some time to process all latest data and information.

**No cutting lengths for others cables family are available!**

# Conclusion

- Cables definition and approval procedures are going on
- Radial layout by channel was proposed
- Cutting lengths definition is the actual bottleneck