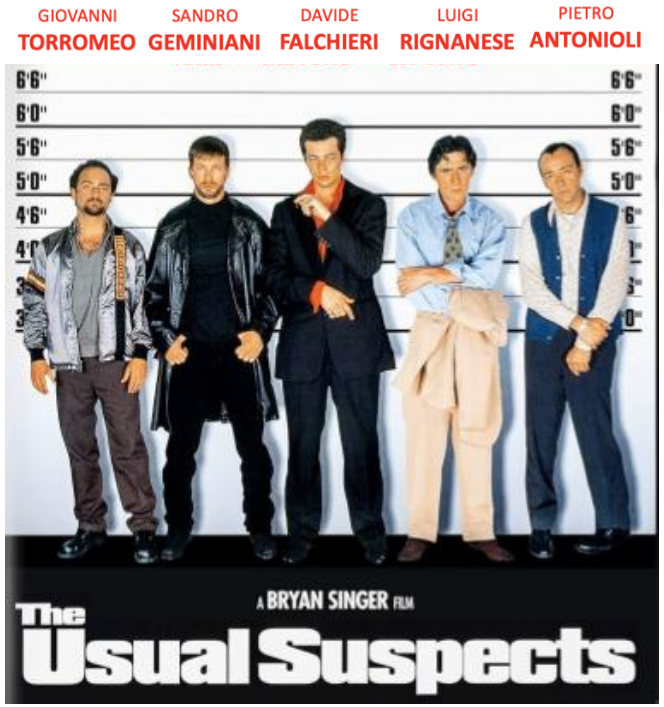
RDO preparation



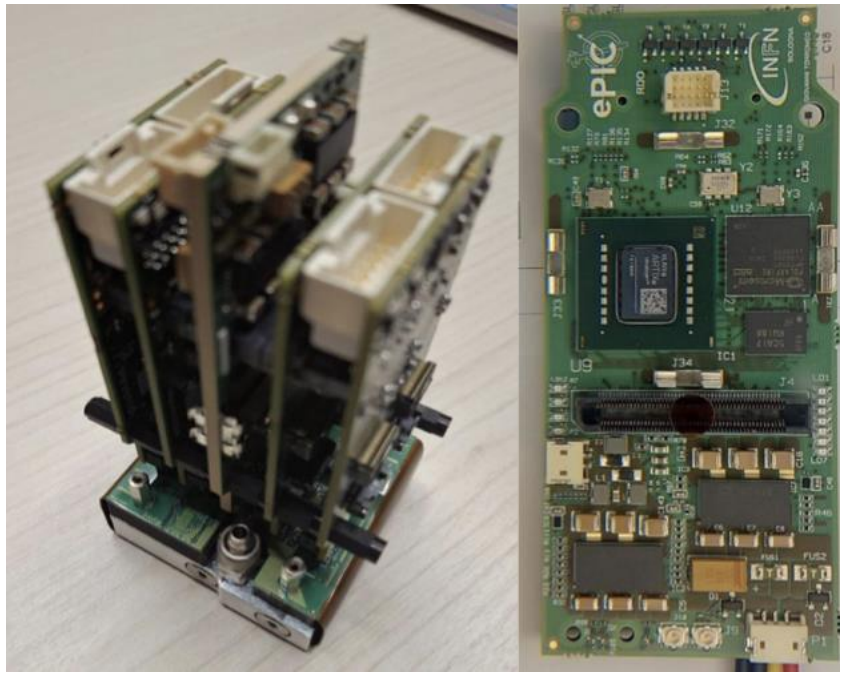
P. Antonioli (INFN Bologna) for the RDO team
[the usual suspects]

(+ many other people, especially from INFN Bologna + INFN Torino)

dRICH meeting
Zoom, 29 October 2025

What is not and what is in in this talk

- no general introduction about RDO
- last status of RDO presented at dRICH meeting 10 September following Electronics and DAQ PDR



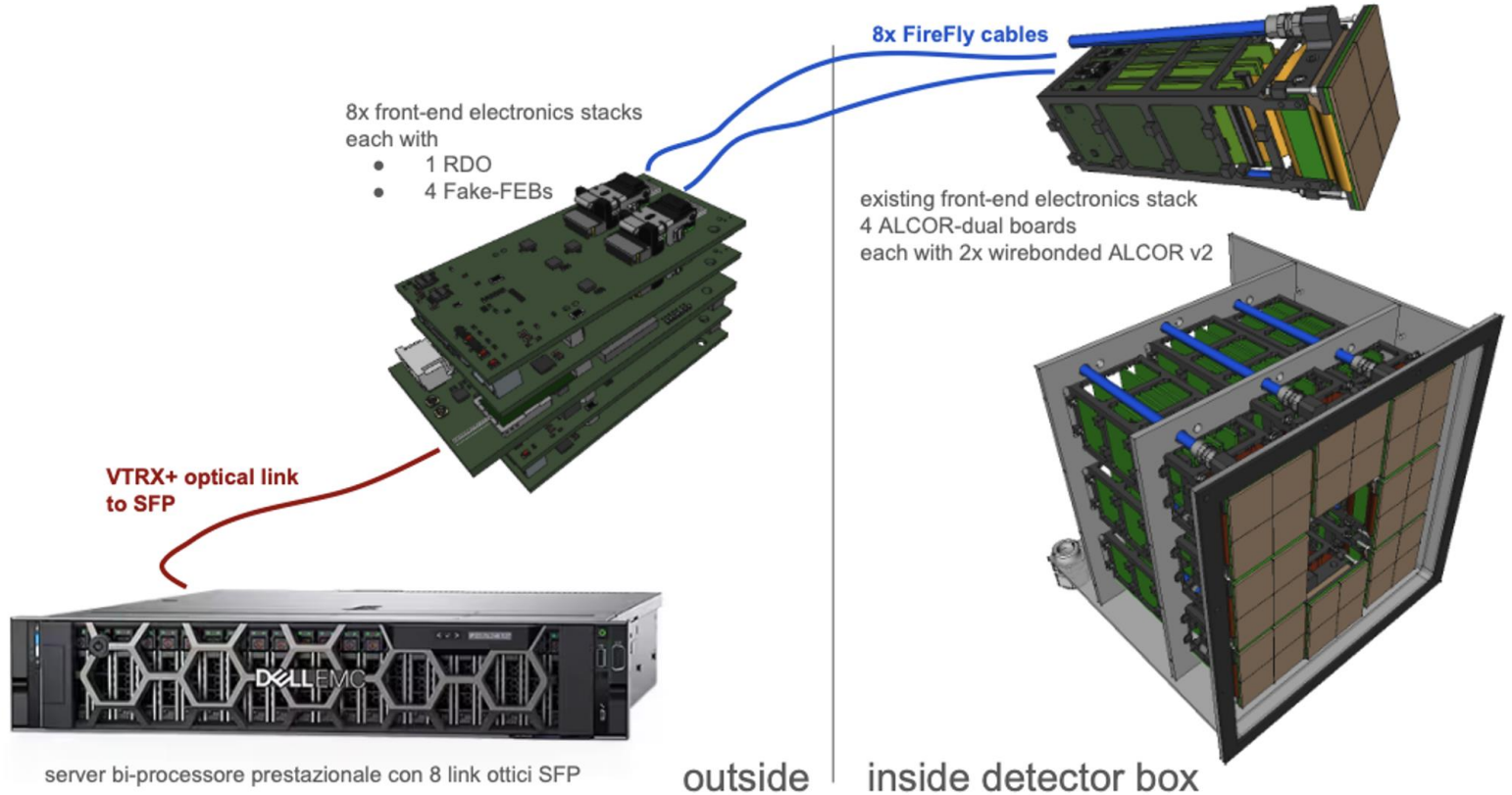
- **focus on RDO preparation for test beam**

- Other relevant links:
  - RDO presentation at Electronics and DAQ PDR (PA)
  - TWEPPP presentation on radiation measurements of RDO components (S. Gemininiani)

The plan

RDO setup for 2025 test beam (Nov. 2025)

- we use IPBUS protocol over VTRX+ with SFP NIC cards on receiving end
- ”fake-FEB” (ALCOR v2.1 adaptor) : two FireFly connectors to reach existing FEB (with 2 ALCOR v2.1)



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RDO status (in short)

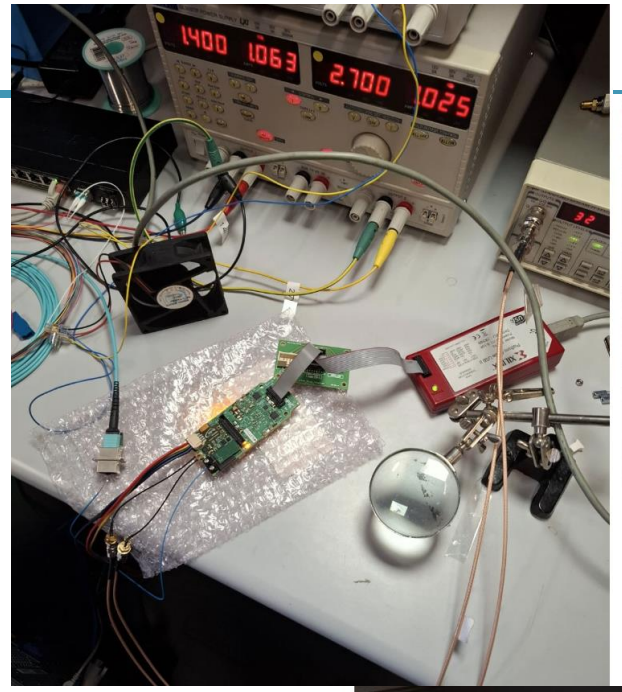
- 2 RDOs delivered 24th July → errors mounting components → rework will be done after test beam
- 8 RDOs delivered first week of October
- out of 8 RDOs, 6 are ok → 2 sent to ARTEL for reworking of LDOs → back by this week

A lot of work behind this, fixing things here and there (no major showstoppers but…) ….

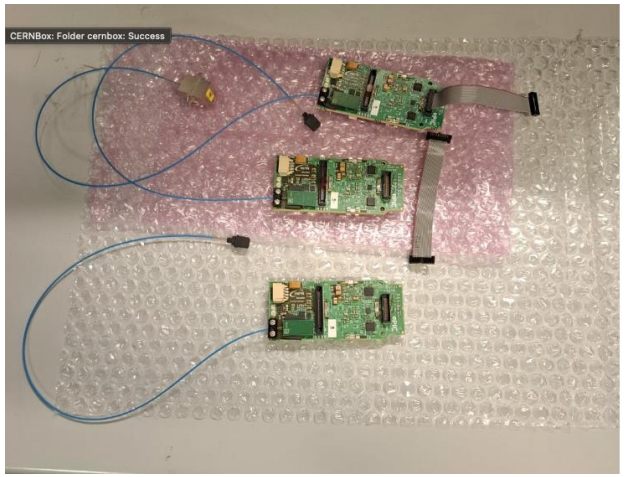
Hardware database maintained by Saint Giovanni Torromeo

Board	Posizione	Programmazione Atmel	Programmazione Xilinx	Programmazione Polarfire	Note	Setting External clock or 40MHz on board	Setting resistors for maximum LDO currents
#0(Lotto1)	Falchieri		OK	OK		Jumper su ckext (R64,R65)	Cambiata R35 da 3.3K a 2.2K per portare Imax su 1.8V a 1363mA e R53 da 2K ad 1.5K per portare Imax su 0.85V a 2A
#1(Lotto1)	Falchieri		OK	OK			Cambiata R35 da 3.3K a 2.2K per portare Imax su 1.8V a 1363mA e R53 da 2K ad 1.5K per portare Imax su 0.85V a 2A
#2	Irnerio?	OK	OK	OK		Jumper su ckext (R64,R65)	Cambiata R35 da 3.3K a 2.2K per portare Imax su 1.8V a 1363mA e R53 da 2K ad 1.5K per portare Imax su 0.85V a 2A
#3	Data a Soave il 22/10/25	OK	NO	NO	2.5V KO (il PGH3 è a 0, escono 0.267V)	40MHz on board	R35=3.3K R53=2K
#4	Falchieri	OK	OK	OK		Jumper su ckext (R64,R65)	Cambiata R35 da 3.3K a 2.2K per portare Imax su 1.8V a 1363mA e R53 da 2K ad 1.5K per portare Imax su 0.85V a 2A
#5	Falchieri	OK	OK	OK	Non erano montat1 FL1 ed FL2 (portano 1.8V ad U7 ed U13), sostituiti con goccia di stagno	Jumper su ckext (R64,R65)	Cambiata R35 da 3.3K a 2.2K per portare Imax su 1.8V a 1363mA e R53 da 2K ad 1.5K per portare Imax su 0.85V a 2A
#6	Data a Soave il 22/10/25	OK	NO	NO	2.5V KO (il PGH3 è a 0, escono 0.9V, provato a rimuovere induttanze L2 ed L3 ed anche C13 ed il problema permane)	40MHz on board	R35=3.3K R53=2K
#7	Falchieri	OK	OK	OK		Jumper su ckext (R64,R65)	Cambiata R35 da 3.3K a 2.2K per portare Imax su 1.8V a 1363mA e R53 da 2K ad 1.5K per portare Imax su 0.85V a 2A
#8	Irnerio?	OK	OK	OK	Non era montato C51, ora montato. C41 e C57 montati male. Su C41 montata una capacità da 10nF al posto di 100nF per indisponibilità in package 0201	Jumper su ckext (R64,R65)	Cambiata R35 da 3.3K a 2.2K per portare Imax su 1.8V a 1363mA e R53 da 2K ad 1.5K per portare Imax su 0.85V a 2A
#9	Irnerio?	OK	OK	OK		Jumper su ckext (R64,R65)	Cambiata R35 da 3.3K a 2.2K per portare Imax su 1.8V a 1363mA e R53 da 2K ad 1.5K per portare Imax su 0.85V a 2A

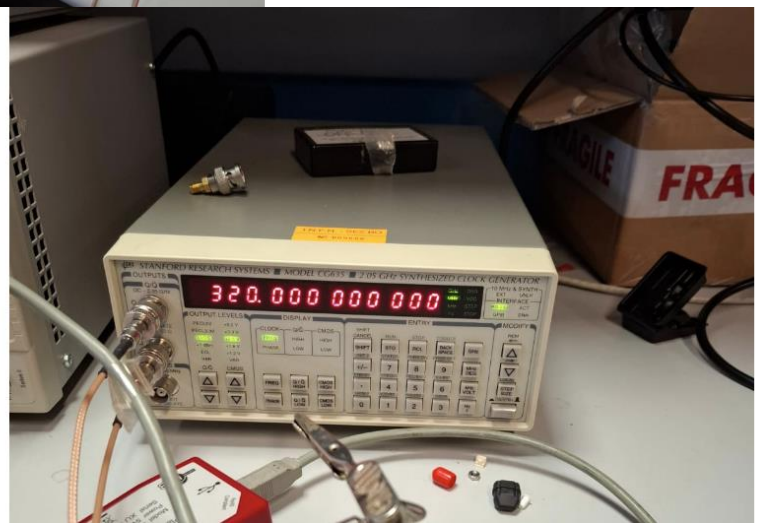
RDO status (by pictures)



external clock

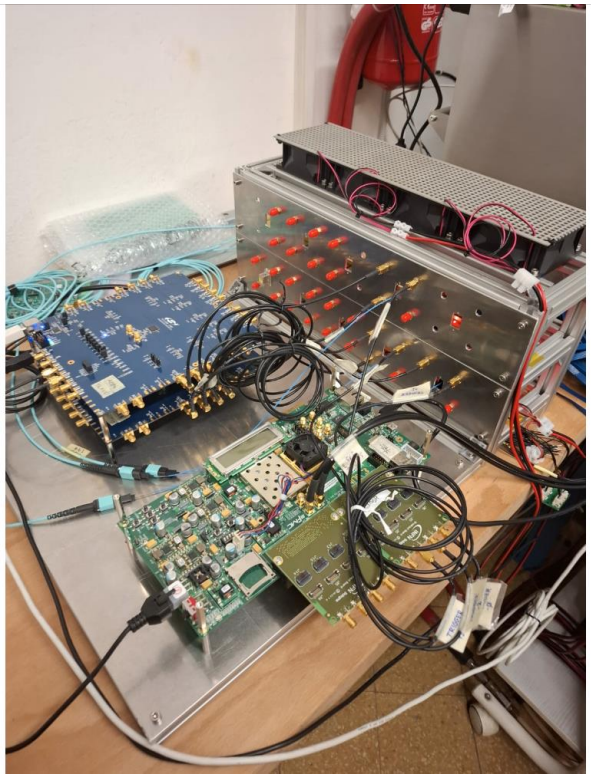


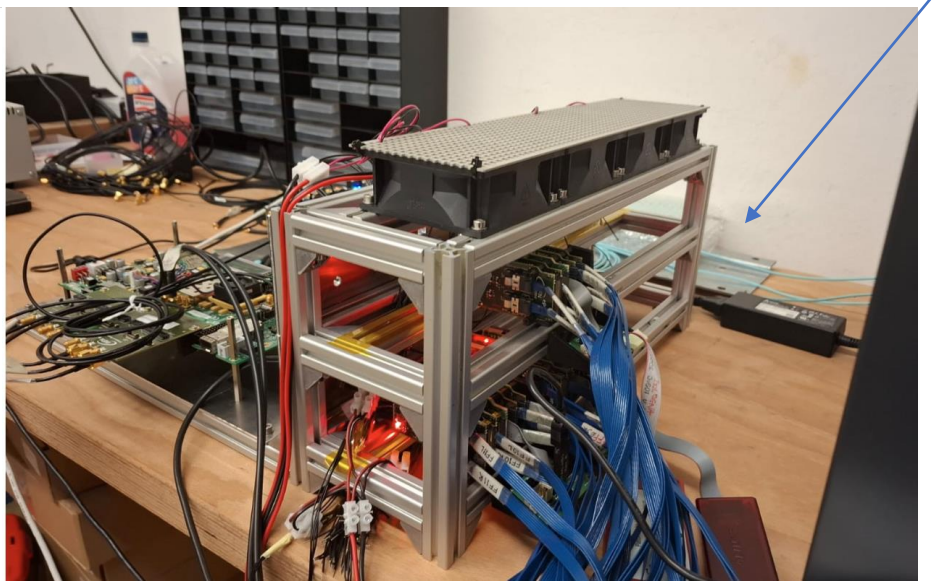
tested RDOs



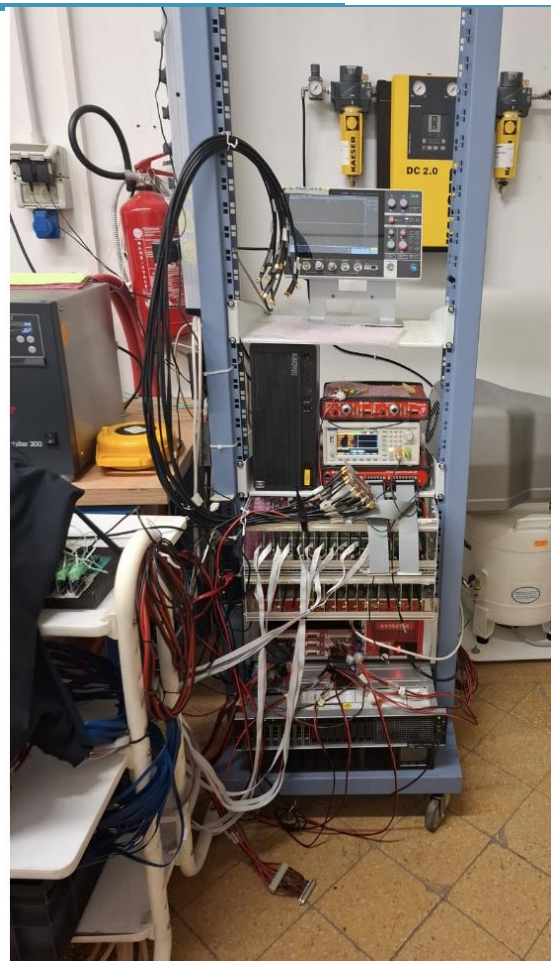
RDO status (by pictures)

optical links from VTRx+





RDO crate with RDO + fake-FEB



power + server with NIC SFP

clock distribution
trigger spill logic
+ 1 KC705 for other stuff (timing)

RDO status (by words)

- huge amount of work debugging/preparing all this fixing hardware issues, firmware and software (including NIC configuration)
- still experiencing problems programming ALCOR on PDU → currently suspecting a grounding problem
- hectic work on many details (adapters to be mounted next days, still chasing programmers and KC705….)
- no time to write other things
- need to go to the lab to debug… ;-)
- see you next week at CERN