

INFN ePIC Italy: meeting with INFN CSN3 referees



Istituto Nazionale di Fisica Nucleare

P. Antonioli – INFN Bologna

on behalf of ePIC Italy

- X** no general update on the EIC project: see Lol + CSN3 presentation
- X** no general update on ePIC status: see Lol + CSN3 presentation
- X** no general update on EIC_NET activities 2023: see consuntivi
- X** no general presentation of ePIC INFN IKC: see Lol, 10 June meeting + “Giornate Nazionali – Primo meeting ePIC Italia”

This meeting focuses on:

- ✓ quick updates on 2024 activity (Jan/Jun)
- ✓ ePIC “INFN detectors”: 2025 program and requests
 - specific “highlights” about new or more requesting funds activities

This presentation focuses on:

- ✓ EIC schedule and CSN3 financial request to ePIC
- ✓ global requests 2025 and status “preventivi” (db not yet finished, activity report on the making)
- ✓ point of attentions about requests
- ✓ milestones 2024
- ✓ proposed milestones 2025

incontro ePIC con i referee INFN



Tuesday 16 Jul 2024, 11:00 → 16:30 Europe/Rome

IR-1A (Sala Riunioni) (Dipartimento di Fisica e Astronomia)

Pietro Antonioli (Istituto Nazionale di Fisica Nucleare)

[EIC_NET Consuntivi...](#) [ePIC CSN3 present...](#) [ePIC LoI](#) [GN EIC_NET 2024 /...](#) [Meeting with INFN ...](#)

<https://agenda.infn.it/event/42627/>

11:00 → 11:20	introduzione generale a richieste ePIC 2025 Speaker: Pietro Antonioli (Istituto Nazionale di Fisica Nucleare)	20m	
11:20 → 11:30	ePIC: attovita' di fisica e richieste 2025 Speaker: Salvatore Fazio (Universita' della Calabria ed INFN-Cosenza)	10m	
11:30 → 11:50	dRICH: organizzazione e quadro generale Speaker: Marco Contalbrigo (Istituto Nazionale di Fisica Nucleare)	20m	
11:50 → 12:05	dRICH: ALCOR Speaker: Marta Ruspa (Istituto Nazionale di Fisica Nucleare)	15m	
12:05 → 12:25	dRICH: electronics integration and SIPM Speaker: Roberto Preghenella (Istituto Nazionale di Fisica Nucleare)	20m	
12:25 → 12:40	dRICH: data reduction on FPGA Speaker: Alessandro Lonardo (Istituto Nazionale di Fisica Nucleare)	15m	
12:40 → 12:55	dRICH: gas system and monitoring Speaker: Fulvio Tessarotto (Istituto Nazionale di Fisica Nucleare)	15m	
12:55 → 13:15	dRICH: interaction tagger Speakers: Marco Battaglieri (Istituto Nazionale di Fisica Nucleare), Dr Mikhail Osipenko (GE)	20m	
14:15 → 14:45	GEM-uRWELL: presentazione detector e richieste 2025 Speaker: Annalisa D'Angelo (Istituto Nazionale di Fisica Nucleare) epic_uRwell_Refere... epic_uRwell_Refere...	30m	
14:45 → 15:05	SVT: quadro generale e richieste 2025 Speaker: Domenico Elia (Istituto Nazionale di Fisica Nucleare)	20m	
15:05 → 15:25	SVT: meccanica inner barrel Speaker: Rosario Turrisi (INFN-PD) RT_ref_bologna.pdf	20m	
15:25 → 16:00	Conclusions (and buffer)	35m	

EIC Schedule – best guess, dates still under discussion

CD-3A:

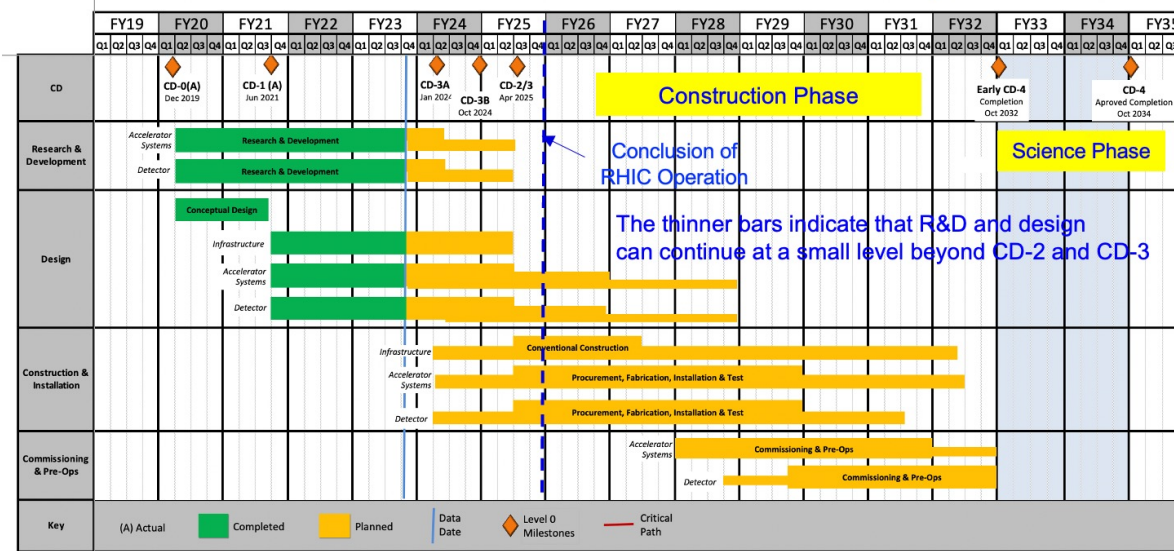
Approve start of long-lead procurements
 CD-3A items passed final design review
 All interfaces related to them are frozen
 Waiting for ESAAB meeting for authorization

CD-2:

Approve prelim. design for all subdetectors
 Design Maturity: >60%
 Need “pre-”TDR (or draft TDR)
 Baseline project in scope, cost, schedule

CD-3:

Approve final design for all subdetectors
 Design Maturity: ~90%
 Need full TDR



- shown at 14th June ePIC meeting
- shown at 18th June CSN3
- now on public domain (shown at QNP conference last Friday!)

CSN3 message:
 make flatter the financial plan

Current EIC Critical Decision Plan	
CD-0/Site Selection	December 2019 ✓
CD-1	June 2021 ✓
CD-3A	March 2024 ✓
CD-3B	October 2024
CD-2/3	April 2025
early CD-4	October 2032
CD-4	October 2034

September 2022 EIC received \$138M DOE
 Inflation Reduction Act funding → CD-3A



Updated Project Schedule: based on the actual appropriated FY24 funding (\$98M), on uncertain FY25 budget scenarios (President’s Budget is only ~\$113M)

Updated EIC Critical Decision Plan	
CD-0/Site Selection	December 2019 ✓
CD-1	June 2021 ✓
CD-3A	March 2024 ✓
CD-3B Review	January 7-9 2025
CD-2/3 Review	End of 2025
early CD-4	December 2034?
CD-4	December 2036?



from R. Ent, “[The Electron-Ion collider Science and Project Status](#)” @ QNP Conference, Barcelona, July 12th 2024
 (highly recommended talk)

Global requests 2025 (macro picture)

BA BO CS CT FE GE LNS PD PV ROMA1 ROMA2 SA TO TS



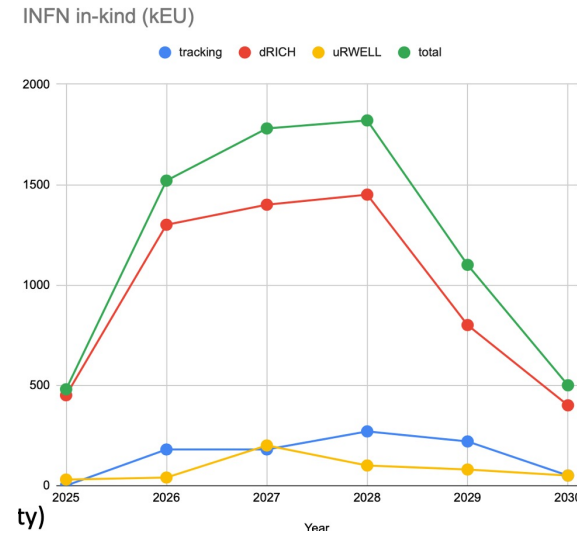
Ricercatori: 86 (26.65 FTE) - Tecnologi: 19 (3.35 FTE) - Tecnici: 2

111	33.65
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declared target in Lol

86+19 = 105
 26.65+3.35=29.0 } This doesn't include synergies yet
 + some "glitches"

Missions:	Request	s.j.	Total inc. missions	Request	s.j.
	286.5	69.5		760.5	391
Total "no missions":		474		321.5 = 795.5 k€	



- In line with prediction given to CSN3 chair(s) end of May
- It includes R&D items (no core) and "DRD" tags for approx 300 k€
- Working on "giustificativi", adjustments on wording + missions

To CSN3: ePIC can't lower requests/year next years if we start with big cuts in 2025...



ePIC
2024 Annual Report
Activity plan for 2025

ePIC Italia
July 2024

[The Electron Ion Collider and the ePIC experiment](#)

[Introduction](#)

[The international project and the ePIC Collaboration](#)

[The INFN contribution to the ePIC Collaboration](#)

[ePIC Italia: status and responsibilities](#)

[EIC project timeline](#)

[EIC project: governance and relevant contacts within INFN](#)

EIC_NET R&D activities (Jan 2024 - June 2024 update)

[Physics and software/computing coordination](#)

[Semi-inclusive DIS \(PV\)](#)

[Diffractive physics - Partonic imaging in coordinate space \(CS\)](#)

[ePIC computing \(BA CT TS\)](#)

[Detector simulation and phenomenological studies \(BA BO SA TS\)](#)

[Detector R&D: dRICH \(BA BO CS CT FE GE LNS RM1 RM-TV SA TO TS\)](#)

[dRICH prototype](#)

[SiPM studies and PDU integration](#)

[The ALCOR ASIC as SiPM front-end](#)

[dRICH DAQ \(RDO and DAM\)](#)

[High pressure Argon as gaseous radiator](#)

[Aerogel studies](#)

[LAPPD studies](#)

[Detector R&D: Si-Vertex \(BA PD PV TS\)](#)

[Detector R&D: GEM-mWELL \(CT GE RM-TV\)](#)

[Detector R&D: streaming readout \(CT GE\)](#)

2025 Activity planning

[Introduction to ePIC requests for 2025](#)

[Physics, software and simulation studies](#)

[Semi-inclusive DIS \(PV\)](#)

[Diffractive physics - Partonic imaging in coordinate space \(CS\)](#)

[ePIC computing \(BA CT TS\)](#)

[Detector simulation \(BA BO FE LNS SA PV TS\)](#)

[Detector R&D: dRICH \(BA BO CS CT FE GE LNS RM1 SA TO TS\)](#)

[dRICH: towards full prototype](#)

[SiPM studies and PDU integration](#)

[ALCOR](#)

[dRICH DAQ \(RDO, DAM and interaction tagger\)](#)

[Monitor Gas system](#)

[Aerogel studies](#)

[Detector R&D: Si-vertex \(BA PD TS PV\)](#)

[Detector R&D: GEM-uRWELL \(CT GE RM2\)](#)

[Detector R&D: streaming readout \(CT GE\)](#)

Appendix A: Synergies with other INFN initiatives

Appendix B: Multi-year financial plan

Appendix C: Proposed milestones 2025 (and 2024 update)

Appendix D: Note on missions budgeting



No 2023 activity → see Consuntivi

Generally “shorter” to avoid repetition with Lol and taking advantage of double meeting with referee before db closure.

You will get it next 24th July

Points of attention: general

- **FTE are somehow underestimated**
- Note 1: 2 PhD almost recruited in BO and FE), unclear if they can stay in snapshot @ 31st July
- Note 2: snapshot at 31st July is particularly penalizing this year: new AdR recruitment under way by the end of the year, but they will not enter into preventivi @: BA BO GE (2) TS (2) PV
- new INFN policy for other “Enti di Ricerca” staff (1 case: Centro Fermi @ Bologna)

- [JLab shift missions for ePIC people involved @ JLab are critical for authorship] → Alessandro/Stefania

- note on DRD
- note on missions in Italy
- note on ePIC Collaboration meetings (January / July)

DRD: in the vacuum of any indication...

FE example

	Missioni per irraggiamento SiPM: corrispondente a 4 turni di 3 giorni, per 1 persona per turno 500 EUR a persona per turno SINERGIA DRD4 WP4.1.2	2.00	0.00
	Test beam dRICH presso il CERN, sub-judice all'assegnazione del tempo fascio corrispondente a quattro turni di una settimana per una persona previsione di spesa: 1500 EUR per turno/persona, ovvero 500 EUR viaggio + 1000 EUR diaria a turno, SINERGIA DRD4 WP4.3	0.00	6.00
	Missioni meeting collaborazione ePIC per responsabilita in dRICH (3 persone x 1 meeting in USA)	7.50	0.00
missioni	Missioni per riunioni di Collaborazione DRD4, 2 viaggi/persona al CERN, 300 EUR viaggio + 700 EUR diaria SINERGIA DRD4 WP4.3	2.00	0.00
	Missioni per riunione nazionale ePIC , 2 viaggi/persona, 750 EUR a viaggio	1.50	0.00
	Missioni per riunione ePIC Collaboration Meeting a Gennaio 2025, 2 viaggi/persona a Frascati, 1250 EUR a viaggio	2.50	0.00
	Missioni in Italia per attivita' di collaborazione su R&D e ingegnerizzazione dRICH, 2 viaggi/persona, 500 EUR a viaggio	1.00	0.00

(in the example not highlighted items having no DRD component)

This is completely DRD specific....

BO example

	Produzione schede di elettronica per sviluppo e integrazione online annealing [sinergia con attivita' in DRD4: WP4.1.2 - Fast radiation hard SiPMs]	5.00
	Acquisti a catalogo RS di utensili per laboratorio, articoli tecnici per laboratorio, materiale elettrico per laboratorio, componenti e materiale elettronico di consumo per laboratorio [sinergia con attivita' in DRD4: WP4.1.1 - SSPD with new configurations and new modes, WP4.1.2 - Fast radiation hard SiPMs, WP4.3.3 - Prototype Single-Photon Sensitive Module]	5.00
	Matrici 8x8 di sensori SiPM Hamamatsu [Realizzazione prototipi dRICH PDU] [sinergia con attivita' in DRD4: WP4.3.3 - Prototype Single-Photon Sensitive Module]	20.00
consumo	SiPM carrier boards v3 prototipo finale [Realizzazione prototipi dRICH PDU] [sinergia con attivita' in DRD4: WP4.3.3 - Prototype Single-Photon Sensitive Module]	5.00
	Fibre ottiche per connessioni MTP su VTRX+, fibre ottiche per connessioni LC/LC su scheda VC709, fibre ottiche per connessioni MTP su VTRX+ e su scheda FELIX-155 [Sviluppo e test dRICH RDO]	1.00

DRD "entries" in BA BO FE PD TS (RM-TV TO)

any indication?
Is ok this way?

for ePIC RL: please notify DRD Collaborations of requests made

Giornate nazionali is two half-days plus a short afternoon... as visible in 2024 meeting agenda this is no longer tenable
→ move to two days → 750 € /person

Meetings in Italy within groups are now critical to deliver goals:

- BA PD PV TS: “SVT Italian cluster” → preparing for assembly (and shipping)
- SA CS CT: build “cluster South” toward SiPM testing
- BO FE TO: dRICH electronics cluster
- BO RM1 GE: dRICH readout & DAQ cluster + tagger (see Roberto, Alesssandro and Marco talks)
- RM-TV GE CT: GEM-uRWELL cluster

- + physics & simulation & theory cluster: (TMD) BO CS FE **PV** SA TO TS (dPDF) CS TO
- note on simulation leading role of TS (dRICH) , BA (SVT), CT (GEM-uRWELL)

see Salvatore talk
part of Marco, Domenico,
Annalisa talks

ePIC Collaboration meetings strategy

ePIC meeting in Frascati (January 2025) “once in five years opportunity”
 ePIC meeting “somewhere in US” (July 2025) → 2.5 k€ each



	BA	BO	CS	CT	FE	GE	LNS	PD	PV	RM1	RM2	SA	TO	TS	Tot. Viaggi	kEU	Commenti
DSP/AC/DSL	0	0	1	0	1	0	0	0	0	0	0	0	0	1	3		TS s.j.
Coord	1	2	0	0	1	1	0	0	0	0	1	0	2	2	10		Umberto T. new PID coordinator
RN	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1		
EICUG	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2		
Viaggi USA	2	2	1	0	2	1	0	0	1	0	1	0	3	3	16	40	
Tor Vergata	4	5	2	2	2	2	2	2	2	2	2	2	3	5	37	46,25	Two travels/each for RM1 / RM-TV we hope with this amount of resources to bring more...
Special RN	2														2	8	RRB + mobilita'
Special DSP														4	4	10	(s.j.) 2 RRB+mobilita'
Tasca RN															10	25	help to travel in US (addition to just responsables) + support to small groups
															Totale	129,25	

- For meeting in US as in 2024 we ask support of coordinators/responsibles: critical nowadays to coordinate + support for a quota from other groups and other collaborators
- Requests for Tor Vergata meeting weighted on FTE + availability + additional FTE we know we will have (PV is an example)

Status milestones 2024

Milestones Concordate		
Data	Descrizione	Comp
30-07-2024 Copia data e testo		
29-09-2024	Finalizzazione disegno ALCOR a 64 canali 	60%
31-12-2024	Realizzazione prototipo RDO 	70%
31-12-2024 Copia data e testo		
31-12-2024	realizzazione disegno readout due dischi basati su tecnologia uRWELL per ePIC endcap 	60%
31-12-2024	Sviluppo procedure di curvatura e interconnessione per prototipizzazione ePIC vertex layer 	40%
31-12-2024	contributo gruppi INFN a preparazione TDR di ePIC nei vari sottosistemi in cui INFN e' parte	0%

- No issues of concerns, all activities on track
- TDR milestone at 0% simply because ePIC is going to be in writing-mode since now on (see presentation of Silvia and Salvatore at GN)

Proposed milestones

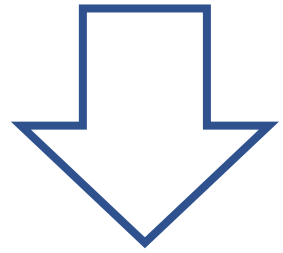
	Date		
PHYS	31/12	Realizzazione di studi di performance dei PID detectors nella estrazione delle TMDs	BO CS FE SA TO TS
SVT	31/12	Realizzazione prototipo termo-meccanico half-barrel strati interni (LO-L1)	SVT groups
SVT	31/12	Realizzazione prototipo e simulazioni termo-meccaniche struttura di supporto globale SVT	SVT groups
ECT	30/6	Study of uTPC track reconstruction of GEM-uRwell prototypes	ECT groups
ECT	31/12	Design and procurement of the first Engineering Test Article	ECT groups
dRICH	30/9	Caratterizzazione campioni aerogel di grande area	dRICH groups
dRICH	31/12	Sviluppo metodi di caratterizzazione del radiatore gassoso nel visibile e vicino UV	dRICH groups
dRICH	31/10	Finalizzazione disegno PDU secondo specifiche ePIC	dRICH groups

ECT=GEM-uRWELL cosi' mi sta!!!

we can recheck them at the end of the meeting after presentations



Giornate Nazionali EIC_NET 2024 - Bologna



Primo meeting nazionale ePIC Italia - Bologna, 27-28 giugno 2024

A word from our spokesperson



<https://www.ornl.gov/staff-profile/john-g-lajoie>



Thanks John!
It was nice, especially for juniors, to "see" the international face of ePIC

