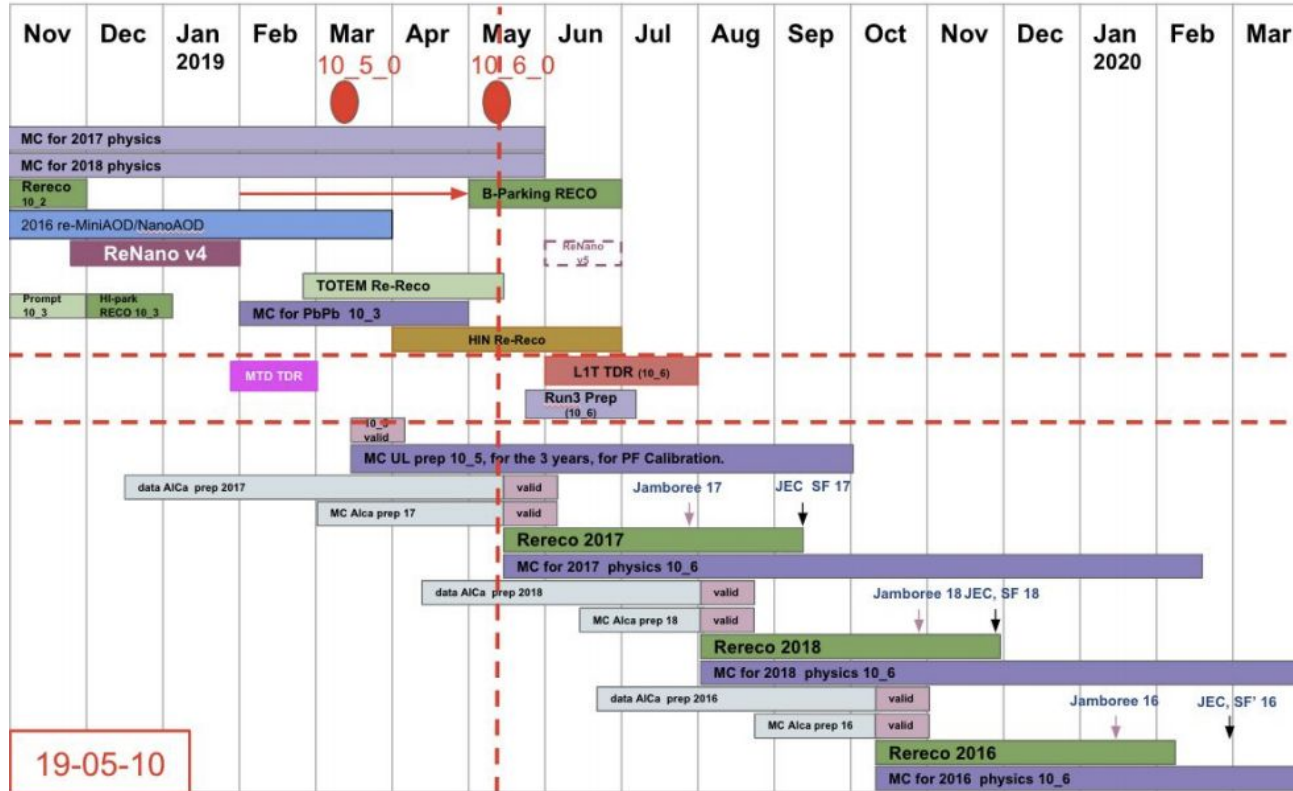


CDG Tier1

CMS Richieste 2020

Situazione attuale



To support for Run-2 analyses

To prepare for Run-3 and Phase-2

To prepare for Run-2 Ultra-Legacy processing

19-05-10

CMS: scrutiny 2019

CERN-RRB-2019-034

Risorse raccomandate dallo scrutiny group (Aprile 2019)

CERN-RRB-2019-058 - 1 April 2019

CMS		2018			2019		2020		
		CRSG recomm.	Pledged	Used	CRSG recomm.	Pledged	Request 2019 req. /2018 CRSG	C-RSG recomm.	
CPU	Tier-0	423	423	365	423	423	423	100%	423
	Tier-1	600	562	540	650	620	650	100%	650
	Tier-2	900	930	1432	1000	960	1000	100%	1000
	HLT	n/a	n/a	148	n/a	n/a	n/a	n/a	n/a
	Total	1923	1915	2485	2073	2003	2073	100%	2073
Others				30					
Disk	Tier-0	26.0	26.1	18.0	26.1	26.1	26.1	100%	26.1
	Tier-1	60.0	55.3	50.0	68.0	63.4	68.0	100%	68.0
	Tier-2	70.0	65.7	63.0	78.0	72.0	78.0	100%	78.0
	Total	156.0	147.1	131.0	172.1	161.5	172.1	100%	172.1
Tape	Tier-0	99.0	97.0	92.0	99.0	99.0	99.0	100%	99.0
	Tier-1	188.0	165.5	127.0	220.0	188.8	220.0	100%	220.0
	Total	287.0	262.5	219.0	319.0	287.8	319.0	100%	319.0

PhD per funding Agency

Italy → 13.50%



Institute FA	PhD #	PhD %
Austria	14	1.01%
Belgium-FNRS	22	1.59%
Belgium-FWO	17	1.23%
Brazil-FAPESP	8	0.58%
Brazil-RENAFAE	20	1.44%
Bulgaria	9	0.65%
CERN	76	5.49%
China	20	1.44%
Colombia	2	0.14%
Croatia	10	0.72%
Cyprus	7	0.51%
Ecuador	2	0.14%
Egypt	2	0.14%
Estonia	5	0.36%
Finland	12	0.87%
France-CEA	15	1.08%
France-IN2P3	42	3.03%
Germany-BMBF	57	4.12%
Germany-Helmholtz	43	3.10%
Greece	15	1.08%
Hungary	10	0.72%
India	38	2.74%
Iran	4	0.29%
Ireland	1	0.07%
Italy	187	13.50%
Korea	30	2.17%
Latvia	1	0.07%
Lithuania	3	0.22%
Malaysia	4	0.29%
Mexico	12	0.87%
Montenegro	1	0.07%
New Zealand	2	0.14%
Pakistan	3	0.22%
Poland	12	0.87%
Portugal	8	0.58%
RDMS-DMS	24	1.73%
RDMS-Russia*	67	4.84%
Serbia	4	0.29%
Spain	42	3.03%
Sri Lanka	4	0.29%
Switzerland ETHZ	19	1.37%
Switzerland PSI	6	0.43%
Switzerland University	8	0.578%
Taipei	11	0.79%
Thailand	3	0.22%
Turkey	15	1.08%
United Kingdom	64	4.62%
USA-DOE	292	21.08%
USA-DOE-NP	26	1.88%
USA-NSF	80	5.78%
USA-OTHER	6	0.43%
Grand Total	1'385	100.00%

Figure 12 CMS resource requests for 2020 and C-RSG recommendations.

N.B. INFN ha finanziato ½ aumento di pledge richiesto per il 2019, ritardando al 2021 il restante ½

Richieste CMS

- **Premessa:**
 - Nel 2018 il finanziamento di $\frac{1}{2}$ del d-pledge 2019 era stato spostato al 2021
 - Su richiesta dei referee abbiamo considerato vari scenari di recupero del d-pledge già nel 2020, considerando anche frazioni maggiori del “fair-share” sui siti PON (25% Bari per CMS)
 - N.B. Le risorse PON arriveranno probabilmente nel 2021
- **Richieste comuni per tutti gli scenari:**
 - Dismissioni CPU 2019 (not granted) + 2020 (storage e CPU)
 - Recupero pledges 2018 per extra costo CPU (tagliata nel 2018)
- **Scenari considerati:**
 - A) Recupero totale d-pledge 2019, distribuzione uniforme fra i tier2
 - B) Recupero totale d-pledge 2019, Bari 49%, LNL/PI/RM 17% ciascuno
 - C) Recupero $\frac{1}{2}$ d-pledge 2019, distribuzione uniforme fra i tier2
 - D) Recupero $\frac{1}{2}$ d-pledge 2019, Bari 49%, LNL/PI/RM 17% ciascuno
 - 0) Solo dismissioni 2019-20 senza recupero d-pledge
- **Ci si può divertire con le infinite combinazioni possibili !**

Tier1 CMS: scenari recupero d-pledge 2019

Frazione recupero	1			
T1	pledge 2019	Recupero	PLEDGE 2020	Eur Delta
CPU (kHS06)	78.251	6.25	84.501	62500
DISK (TBN)	8020	820	8840	114800
TAPE (TB)	26520	2080	28600	52000
				229300

Frazione recupero	0.5			
T1	pledge 2019	Recupero	PLEDGE 2020	Eur Delta
CPU (kHS06)	78.251	3.125	81.376	31250
DISK (TBN)	8020	410	8430	57400
TAPE (TB)	26520	1040	27560	26000
				114650

Risorsa	Euro
1 HS06	10
1 TBN	140
1 TB Tape	25

CNAF: Pledges 2019 not granted	
CPU (kHS06)	6.25
Disk (TBN)	820
Tape (TB)	2080

N.B. Mancano le
dismissioni!
Vedi talk di Luca

CMS Italia: pledges 2018 e 2019 (rebus)

Sito	CPU (kHS06)	Disk (Pb)	Tape (Pb)
Tier1	(72.0) 78.251 (84.5)	(7.2) 8.02 (8.84)	(24.44) 26.520 (28.600)
Tier2 federation	(108.0) 119.00 (130)	(8.4) 9.271 (10.140)	

N.B. Fra parentesi a sinistra in verde il pledge 2018, a destra in rosso il pledge richiesto nel 2018, il cui incremento e' stato dimezzato (e spostato al 2021).
Al centro il pledge in rebus per il 2019

- D-pledge 2019 not granted da INFN
 - Tier2 federation
 - CPU: 11 kHS06
 - Disk: 870 TBN
 - Tier1
 - CPU: 6.25 kHS06
 - Disk: 820 TBN
 - Tape: 2.08 PB



Situazione Fine 2019		
kHS06	TBN	
33.2875	2,290.25	Bari
28.3875	2,441.25	Pisa
29.5375	2,840.25	Legnaro
27.7875	1,698.25	Roma1
119	9,270.00	

Dismissioni tier2 (2019-21)

	Bari	Legnaro	Pisa	Roma
Disco 2019 (TBN)	140	176	0	0
Disco 2020 (TBN)	640	704	120	0
Disco 2021 (TBN)	970	880	350	500

	Bari	Legnaro	Pisa	Roma
CPU 2019 (kHS06)	5.5	11.7	3.3	7
CPU 2020 (kHS06)	4.6	6.9	4.75	5
CPU 2021 (kHS06)	8	3	10.4	3

Dismissioni disco tier2 “totali” nel triennio 2019-21: 4480 TBN

Richieste 2020 Tier2, scenario A

- Italia: 13% di CMS
- 1 TBN = 140€
- 1 HS06 = 10€

Recup. pledge	Fraz. pledge PON													
1	0.25													
recupero D-pledge 2019 (kHS06)	recupero D-pledge 2019 (TBN)	Dismissioni 2019 (not granted)	Dismissioni 2020	Totale dismissioni CPU	Dismissioni 2020 disco	Totale CPU	Totale disco	CPU (euro)	Disco (euro)	Recupero pledges CPU 2018 (Eur)	Rete	Server	Totale (euro)	
		kHS06	kHS06	kHS06	TBN									
Bari	2.75	217.5	0.00	4.6	4.60	640	7.35	857.5	73500	120050	5206.25	6774.25	205530.5	
Pisa	2.75	217.5	2.55	4.75	7.30	120	10.05	337.5	100500	47250	4196.25	5171.25	165517.5	
Legnaro	2.75	217.5	4.05	6.9	10.95	704	13.70	921.5	137000	129010	7335.25	9310.35	301455.6	
Roma1	2.75	217.5	2.45	5	7.45	0	10.20	217.5	102000	30450	3821.25	4635.75	151507	
Totali	11	870	9.05	21.25	30.30	1464	41.30	2334	413000	326760	37800	20559	824010.6	

Spesa extra PON: 618481 €

Gare CPU Tier2 2019 (consip, in corso)

- Bari → PON
- LNL
 - DELL PowerEdge C6420 (consip), ~ 8.5 €/HS06
- Pisa
 - Dell R7425, 32C/64T, 256GB, Epyc 7301, ~8 €/HS06
- Roma
 - DELL PowerEdge C6420 (consip), ~8.5 €/HS06

Gare storage Tier2 2019 (in corso)

- Bari → PON
- LNL
 - **AQ storage**, col CNAF, gara in costruzione **(TBN 394)**
- Pisa
 - espansione sistema DDN SFA7990 (gara locale, iniziata procedura) **(TBN 217)**
 - AQ col CNAF per gli anni 2020-21
- Roma
 - Espansione sistema DELL ME412 esistente, (gara locale, iniziata procedura), **(TBN 217)**