

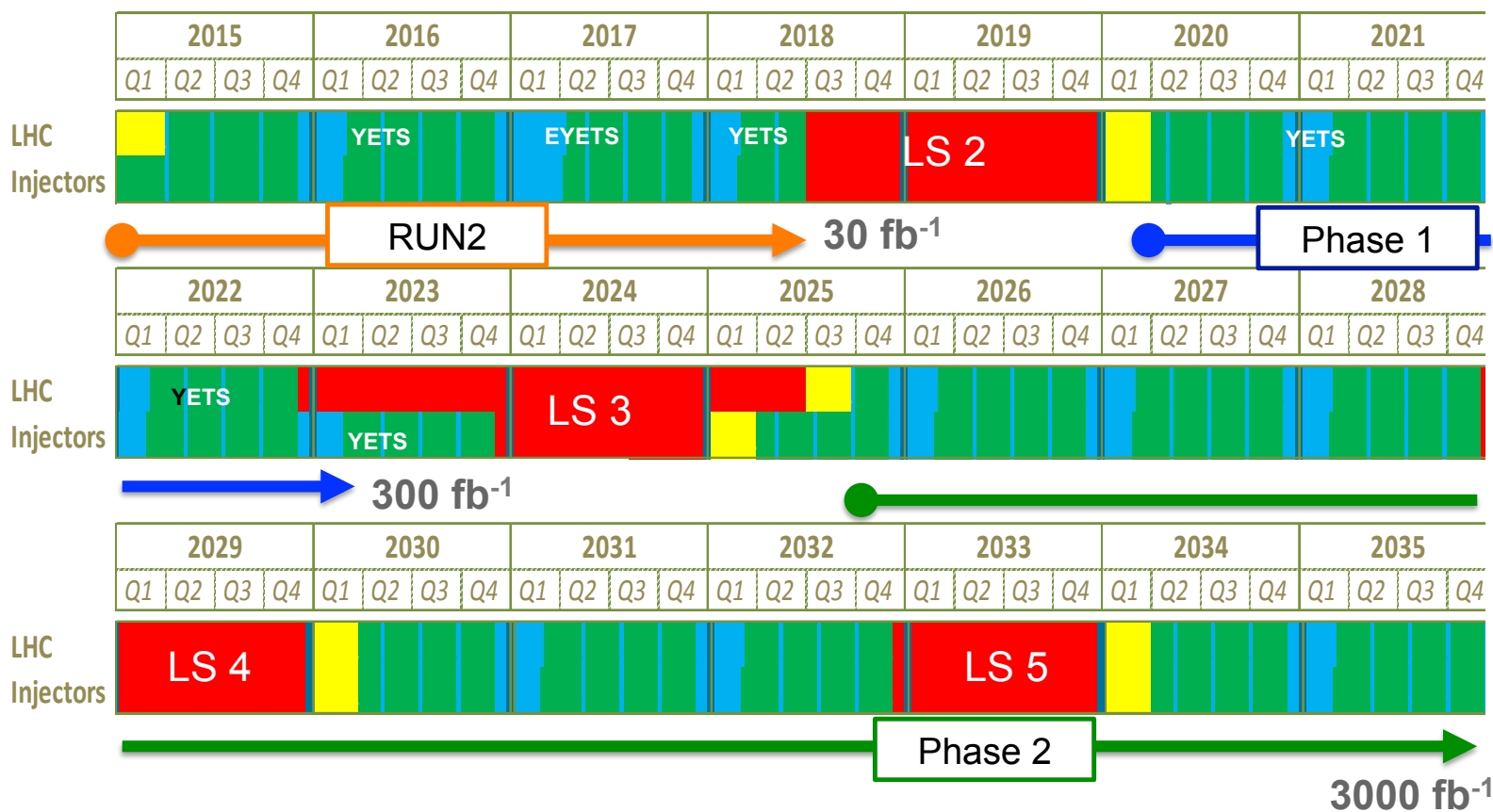
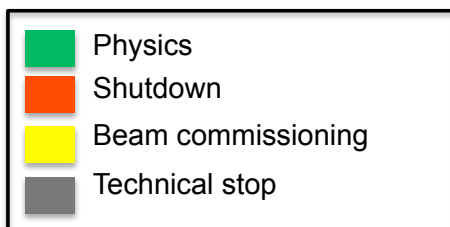
Sommario CSN1, Catania 29/09-03/10

Consiglio di Sezione, Milano 21/10/2014

Attilio Andreazza

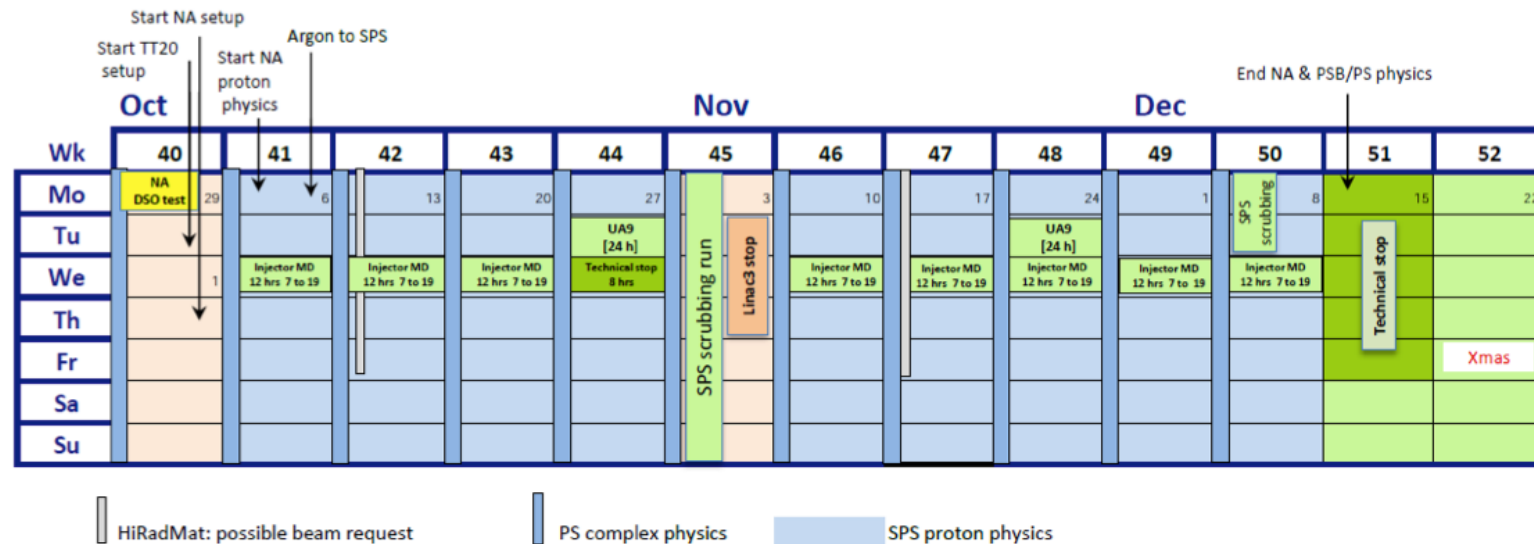
LHC Schedule beyond LS1

Gianluigi Arduini IFD2014 - Trento

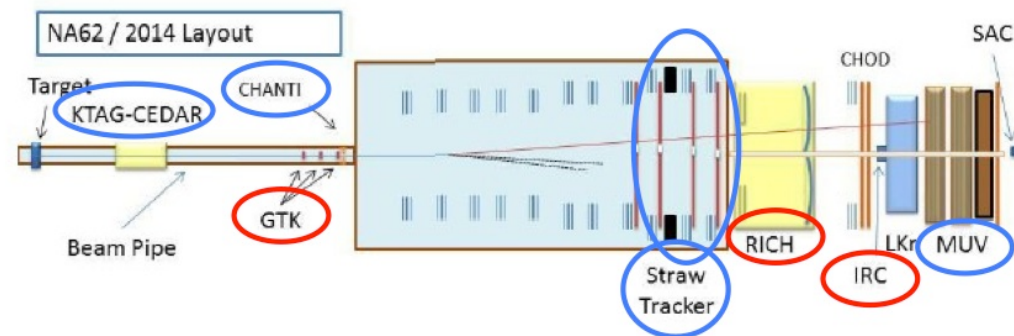
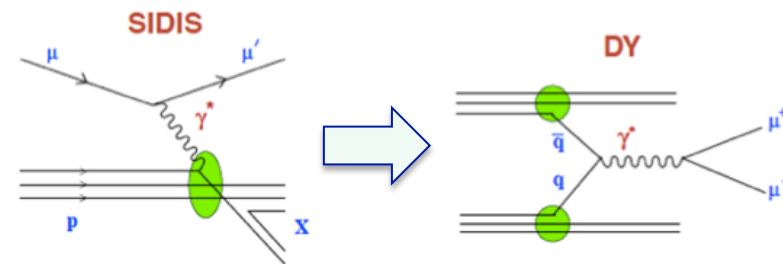


LHC schedule approved by CERN management and LHC experiments spokespersons and technical coordinators (December 2013)

...ma fixed target già nel 2014



- **COMPASS** riprende dati, dopo un upgrade del rivelatore e bersaglio per misure di DY
- **NA62** inizia la presa dati: commissioning con decadimenti principali del K^+
Obiettivo: $K^+ \rightarrow \pi^+ \nu \bar{\nu}$
(ex. $0.85 \pm 0.07 \times 10^{-10}$)



Un futuro per la NA?

General Layout



Progetto per fasci di alta intensità:

- Proposta esperimento **Search for HIDDEN Particle**
- Estensione del programma di **NA62 o COMPASS**
- Costo ~100 M€

SHIP AREA on the French CERN Site in Préveessin



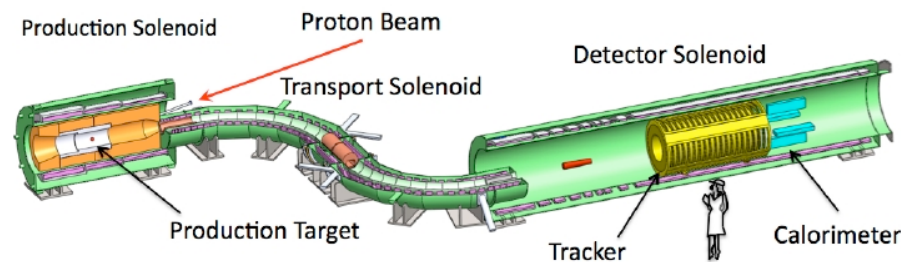
2/6/2014

J. Osborne, M. Manfredi, GS-SE-FAS

Milano, 21/10/2014

A. Andreazza - Sommario CSN1

- In espansione gli esperimenti in area asiatica:
 - **BELLE II**
 - 22.3 FTE → **27.3 FTE**, 859 k€ → **975 k€**
 - **BES III**
 - 14 FTE → **19.5 FTE**, 368 k€ → **482 k€**
 - Ricorso a fondi esterni (UE, Affari Esteri) per supporto missioni
- Si iniziano a definire esplicitamente gli impegni INFN per il *Muon Campus* di Fermilab:
 - **g-2**
 - INFN fornirà il sistema di calibrazione dell'esperimento (~350 k€ in 2015-2016)
 - **Mu2e**
 - Progetto da 270 M\$, costruzione 2015-2020
 - Partecipazione INFN sul calorimetro: servizi, calibrazione, elettroni ~1 M€
30-50% del rivelatore ~1.5 M€
 - Deve ancora venire approvato dal CTS
 - Entrambi gli esperimenti hanno passato/stanno passando bene le review del DOE



Bilancio generale

	Missioni	Consumi	Inventariabile	Apparati	Totale
Preventivi 2014	11320	7972	1845	5063	26200
Assegnazioni 2014	8000	6299	740	4761	19800
Preventivi 2015	12960	9038	2814	(*)4605	(*)30401
Assegnazioni 2015	8300	4904	900	5596	19700

- 836 FTE nel 2014 → 851 FTE nel 2015
- Bilancio ridotto di 100 k€ → Grant di CSN5
- Aumento generalizzato (~15%) delle richieste di missione, in concomitanza con la ripresa del run di LHC
 - Altri piccoli contributi dall'inizio del run di NA62, installazione di Belle II
- Extra bilancio: 2200 k€ da premiale per upgrade LHC (esperimento RD_FASE2)

(*) Non mi torna il totale delle richieste (DB assegnazioni) con quello nei preventivi, la differenza, 1M probabilmente in Apparati.

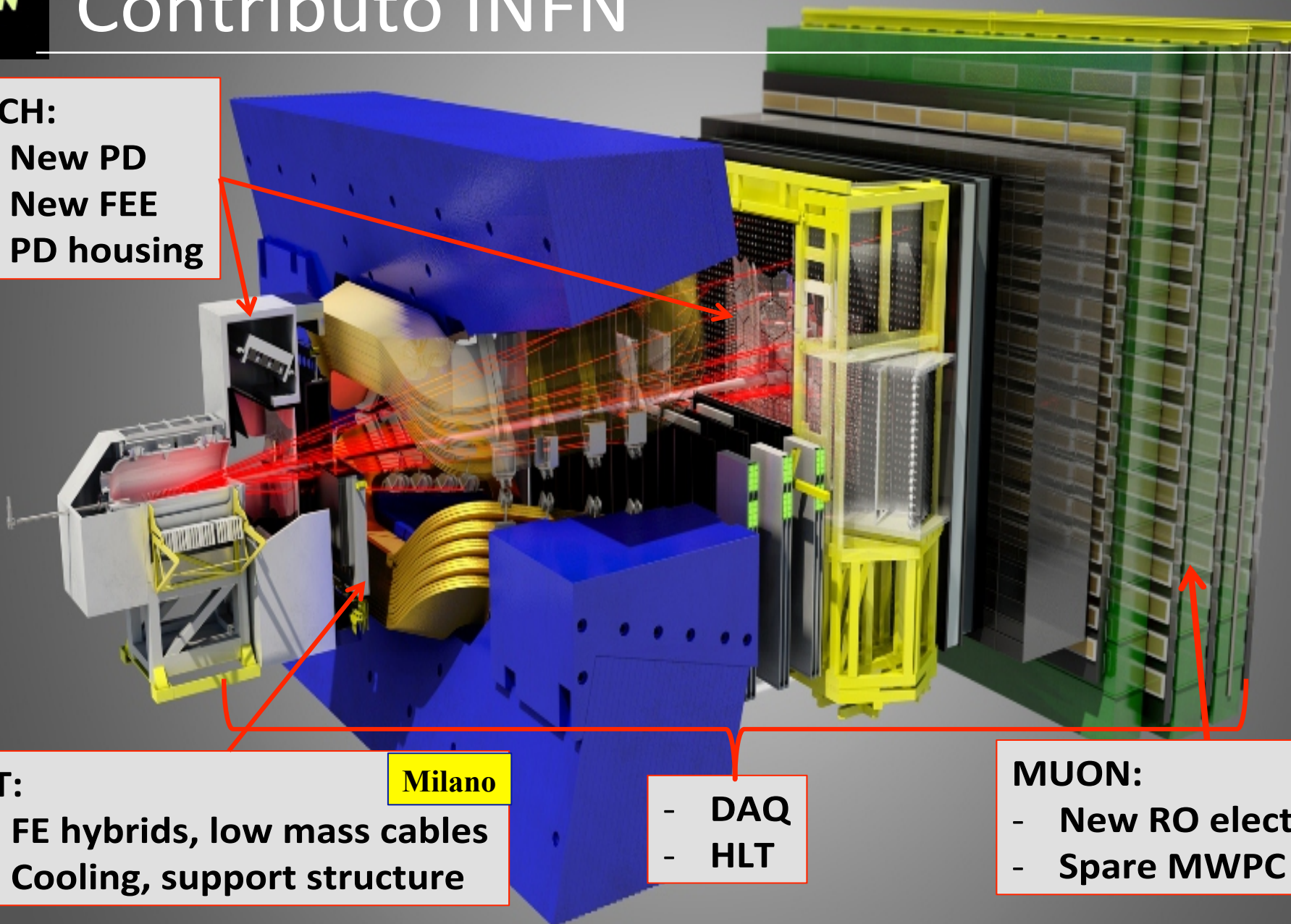
Sigla	FTE		Missioni		Consumi		Invent./ Apparati	
	2015	2014	2015	2014	2015	2014	2015	2014
ATLAS +RD_FASE2	15.1 +3.9	22.8	137	125 4	47+130.5	142.5+123	323	286
BABAR	0.2	0.2	su R.N.	2.5				
P-ILC	0.4	0.4	10	14				
LHC-B	6.4	7.4	42	38	38.5+5	12	30	80
Dotazioni	26.0	30.8	24	25.5	15.5	18	23	25

- Riduzione di FTE per partecipazione a progetti di CSN5 e fondi esterni (~6.3)

Contributo INFN

RICH:

- New PD
- New FEE
- PD housing



UT:

- FE hybrids, low mass cables
- Cooling, support structure

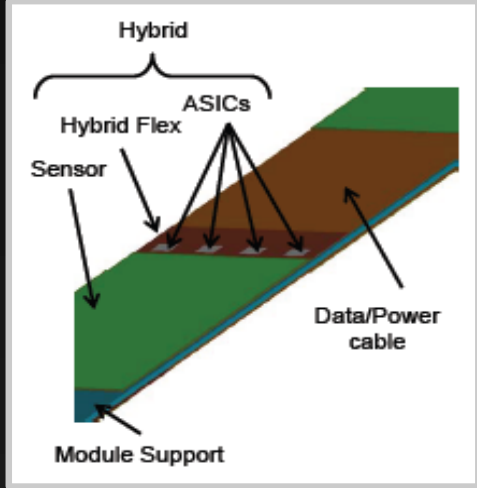
Milano

- DAQ
- HLT

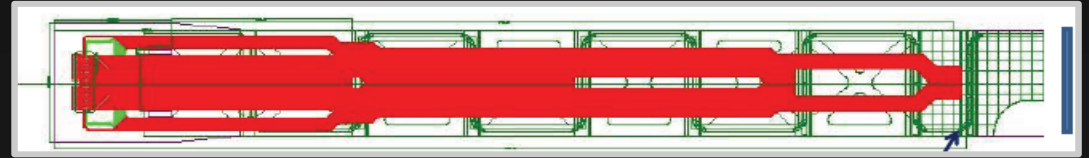
MUON:

- New RO electronics
- Spare MWPC

Tracking detectors: UT (MI)



Concept of Sensor+ASIC hybrid module being finalised
Evaluation of materials for the stiffener and thermal interfaces



Design of data/power flex almost final. Prototypes being produced (Milano)

SALT ASIC design review will be held on October 20. This should bring to the submission of an 8-channel prototype

CO2 cooling plant prototype designed by Milano being built in INFN Milano workshop

TRACI=Transportable Refrigeration Apparatus for Co2 Investigation

Re-Design and production of the working drawings finished (Milano technical office)

Collaboration group: CERN, NIKHEF, MILANO, SHEFFIELD, OXFORD, LIVERPOOL

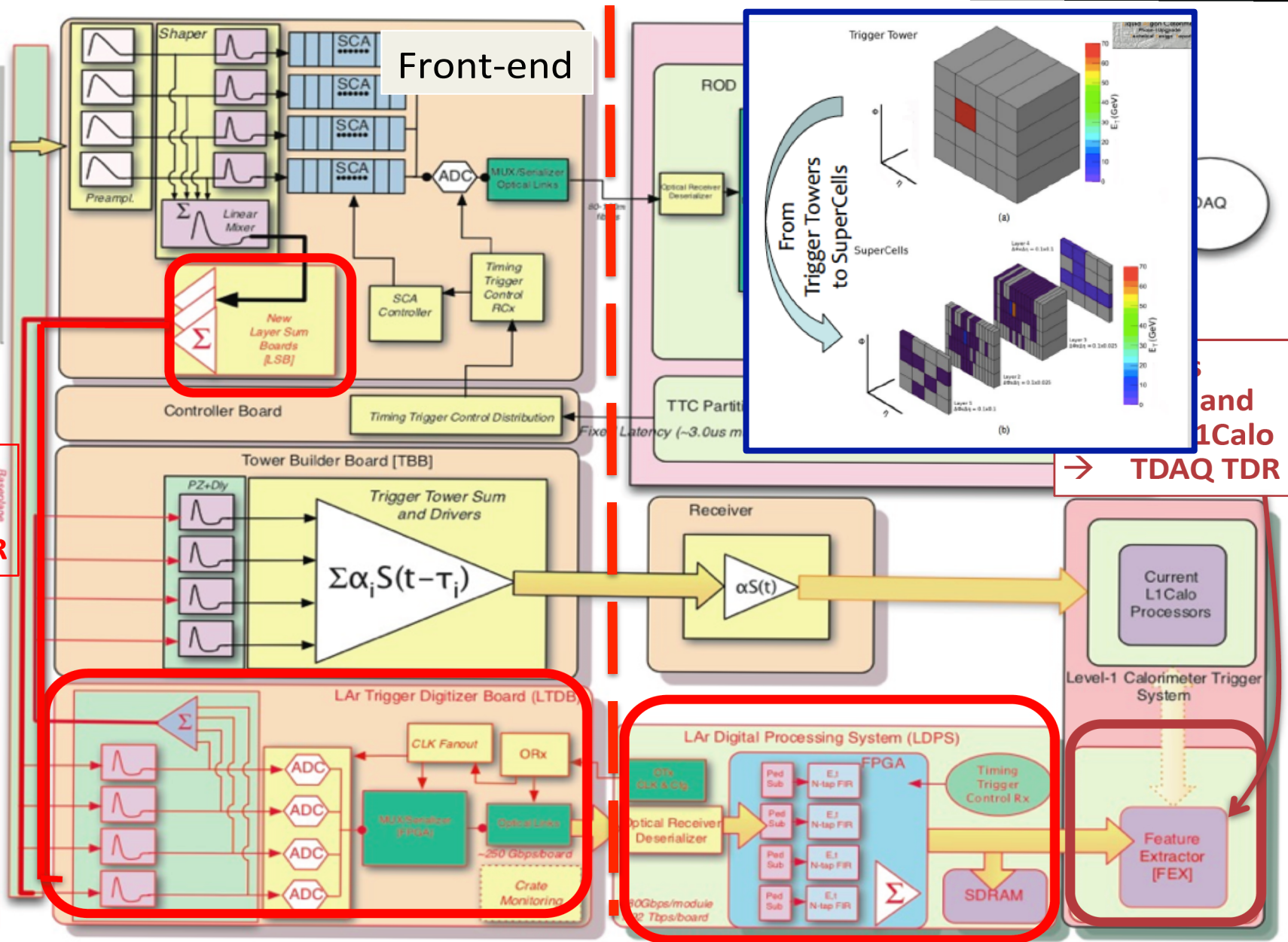
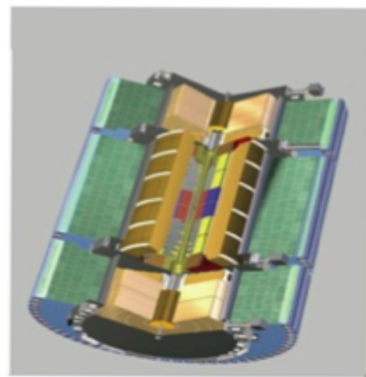
TRACI structures assembled (Milano mech. Workshop)

Design of the test set-up in progress

Ordering sensor for the test set-up

PIEZORESISTIVE PRESSURE TRANSMITTERS

Schematic of LAr electronics



AMchip05, its Test Stand, and AMchip06

Design: Stabile (MI) – Crescioli (LPNHE) – Beretta (LNF)

Big improvements in AMchip design

- AMchip04 power consumption / # of bit / MHz decreases of a **factor ~28** w.r.t. AMchip03
- AMchip04 memory density (patterns*layers/area) increase of a **factor ~18** w.r.t. AMchip03
- High speed serial links (11 times 2 Gb/s)

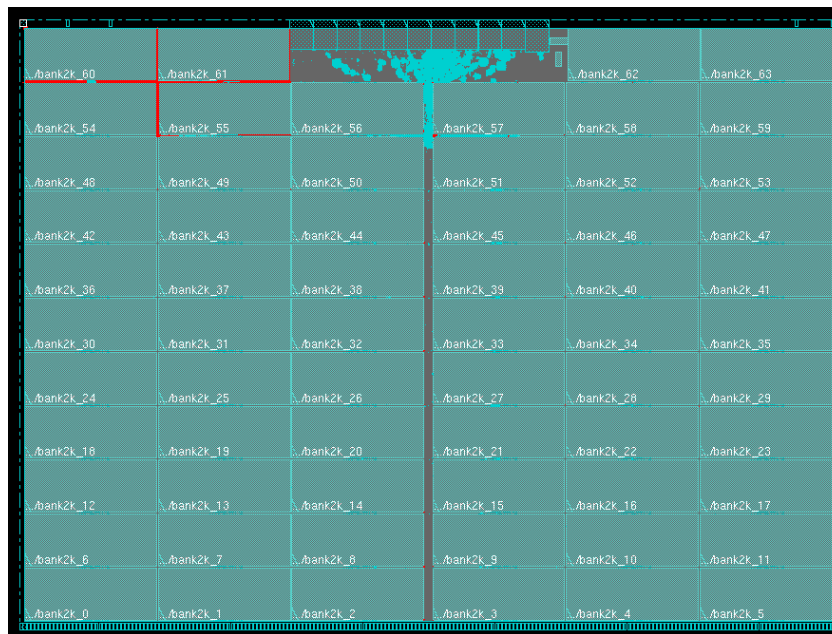
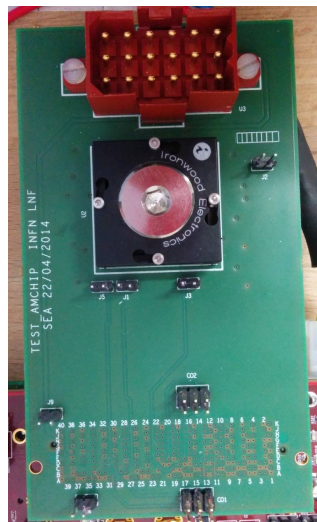
200 k€ per produzione AMchip06
Valentino Liberali nuovo RN

New layout 128 kpatt

(Stabile work, Stabile/Liberali cell)

14.6 mm x 10.8 mm²

23x23 mm² BGA for
AM05: 3k patterns
and AM06: 128k patt.



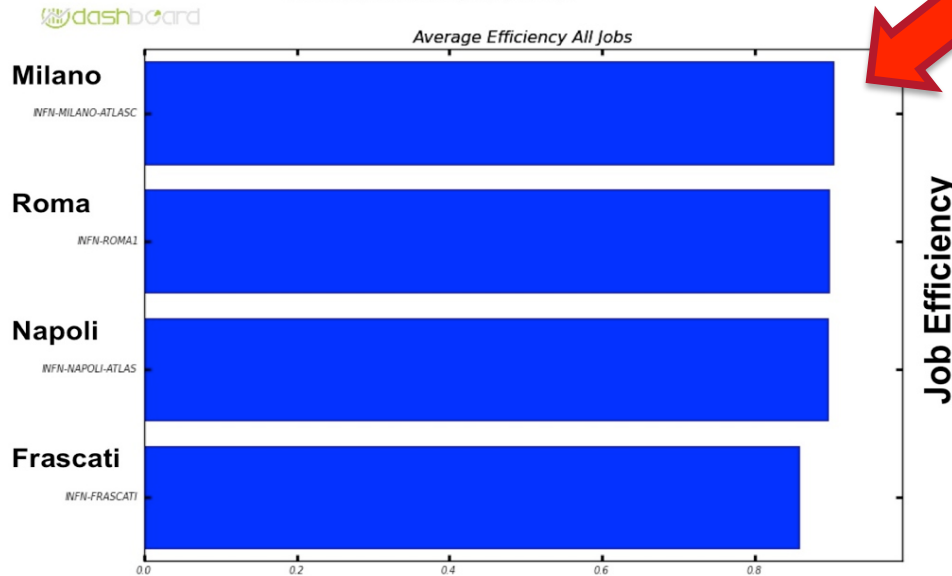
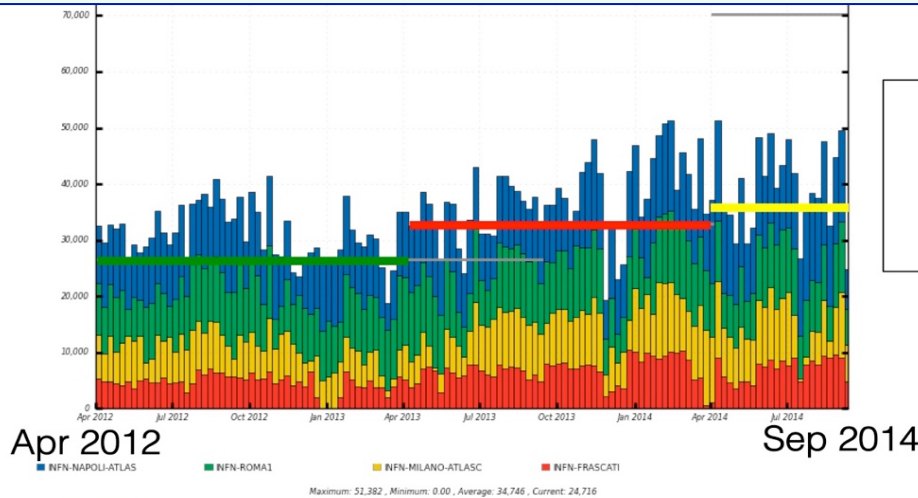
See for full information:

<https://agenda.infn.it/getFile.py/access?contribId=10&sessionId=1&resId=0&materialId=slides&confId=8420>

ATLAS: Utilizzo risorse Tier 2 in Italia

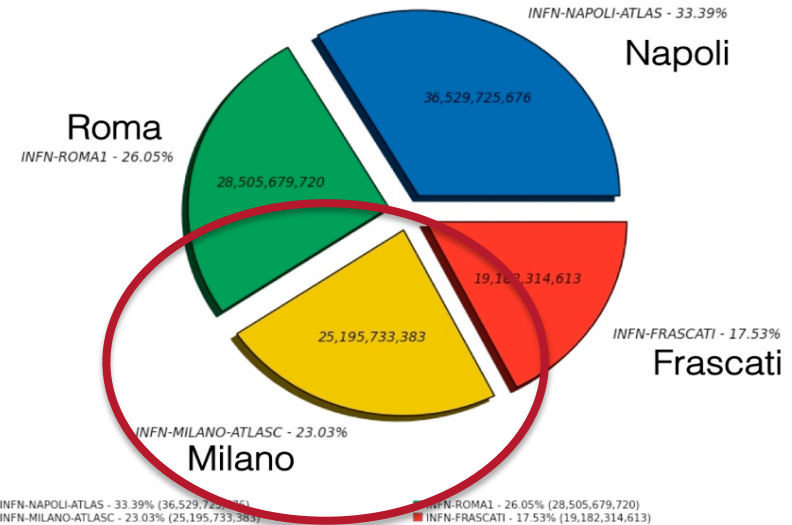


Giudizi positivi da review Tier-2 organizzata da INFN!
Attesa esplosione di dati con Run2: Trigger a 1 kHz (?)
È compatibile con flat budget?



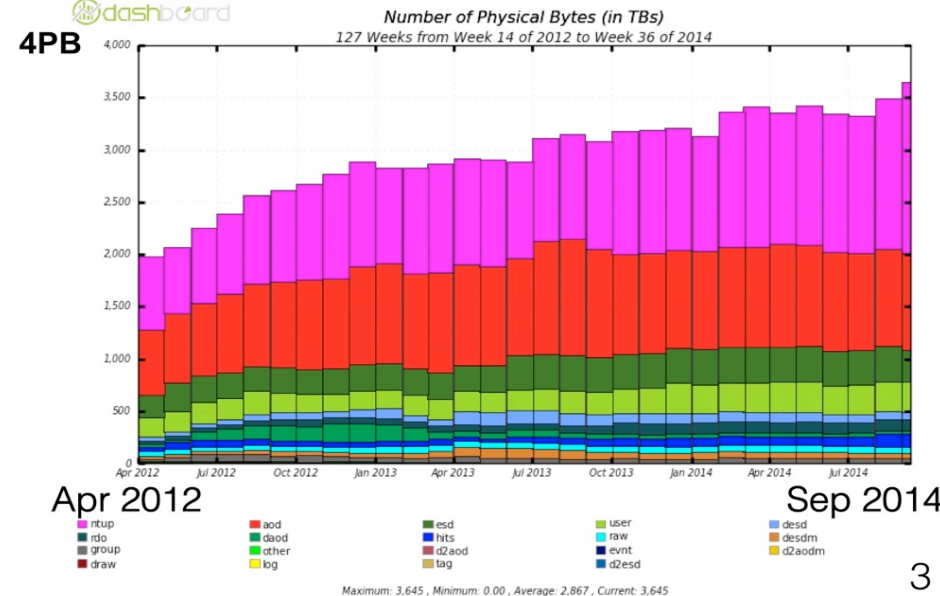
dashboard

Wall Clock consumption All Jobs in seconds (Sum: 109,413,453,392)



dashboard

4PB

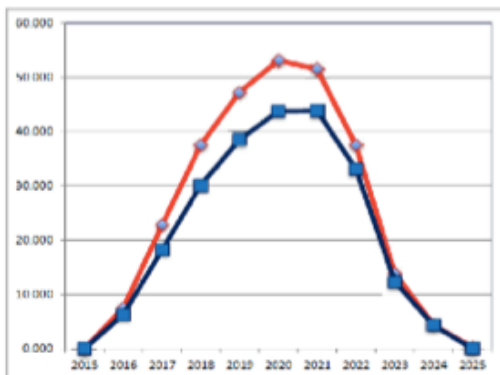


ATLAS upgrade

Last RRB → new Phase II CORE cost Profile

New ATLAS PHASE II upgrade (LS3) with Options Included

		it will happen	it might happen	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	total
		[MCHF]	[MCHF]	[MCHF]	[MCHF]	[MCHF]	[MCHF]	[MCHF]	[MCHF]	[MCHF]	[MCHF]	[MCHF]	[MCHF]	[MCHF]	[MCHF]
1	New Inner Detector	131.500	26.000	0.000	6.707	17.906	31.919	33.836	29.284	18.565	14.373	9.911	0.000	0.000	157.500
2	LAr upgrades	32.124	15.096	0.000	0.700	4.458	4.519	6.895	11.554	11.321	7.111	0.209	0.991	0.182	47.220
3	Tiles upgrades	7.483	2.517	0.000	0.000	0.000	0.000	1.499	2.177	5.339	0.800	0.080	0.000	0.000	10.000
4	Muon spectrometer upgrades	19.632	0.500	0.000	0.103	0.282	0.692	3.888	5.169	6.922	2.871	8.205	0.000	0.000	20.132
5	TDAQ upgrades	23.315	0.900	0.000	0.000	0.000	0.000	0.500	2.020	5.020	7.355	5.000	4.320	0.000	24.215
6	Infrastructure items	16.280	0.000	0.000	0.000	0.100	0.400	0.600	2.850	4.100	4.880	3.350	0.000	0.000	16.280
	TOTAL	230.334	45.013	0.000	7.510	22.746	37.530	47.218	53.054	51.416	37.445	13.835	4.411	0.182	275.347



New Phase-II Profile

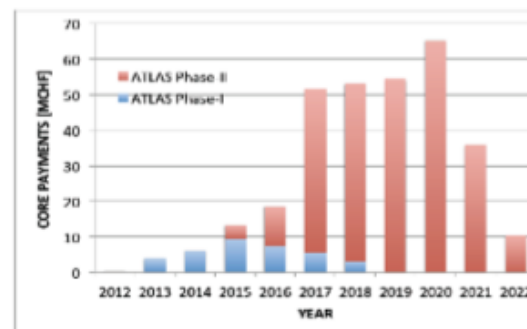
- Spostamento di 1 anno
- Picco di spesa nel 2020-2021

Cost Time Profile

CORE costing

Phase-1 uses
TDR costings

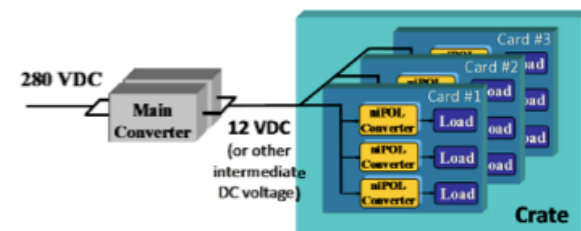
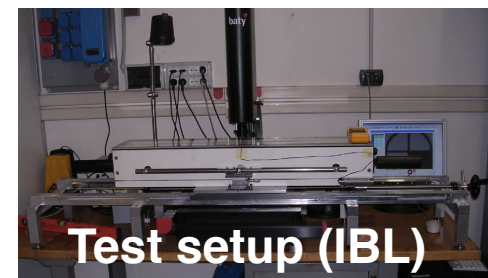
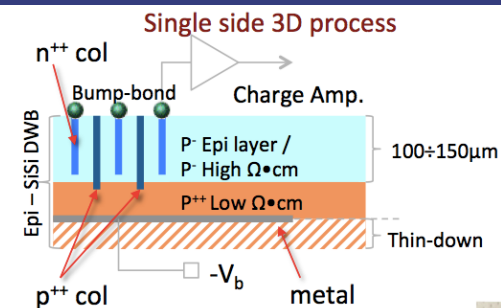
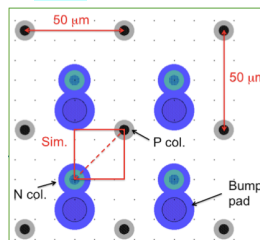
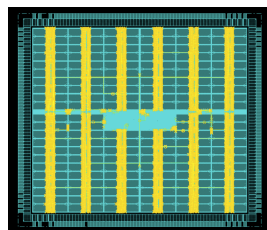
Phase-2 uses
LoI costings,
and includes
options



Old LoI Based Profile

Simile per CMS
Quota italiana ~10%

A. Di Ciaccio



Attività	Rich.	Ass.	INFN Milano 2015	
Tracciatore	1392	1032	Bump bonding, test rivelatori 3D, Cooling	97
Track trigger	470	450	Multi project wafer in 28 nm (s.j. AMChip06)	23
RPC (muon trigger)	287	206		
Muons (ATLAS)	150	40		
Muons (CMS)	280	155		
Calorimetri (ATLAS)	163	153	LAr calorimeter: DC power, Trigger	40
Calorimetri (CMS)	260	150		
Totale	3002	2186		

- Programma triennale 2015-17 (+anticipi nel 2014)

Siete tutti invitati

Physics Department/INFN joint seminar
**DIPARTIMENTO DI FISICA, VIA CELORIA
16, MILANO**

Aula Consiglio
October 28th, 2014 – 14:30

Caterina Doglioni

Università di Ginevra e CERN

**Seeking discoveries with hadronic jets
at the Large Hadron Collider**