

ATLAS ITK LECCE

Pixel Status in ATLAS e Lecce

G. Chiodini - INFN Lecce

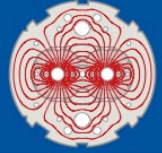
ATLAS ITK LECCE

22-Oct-2020

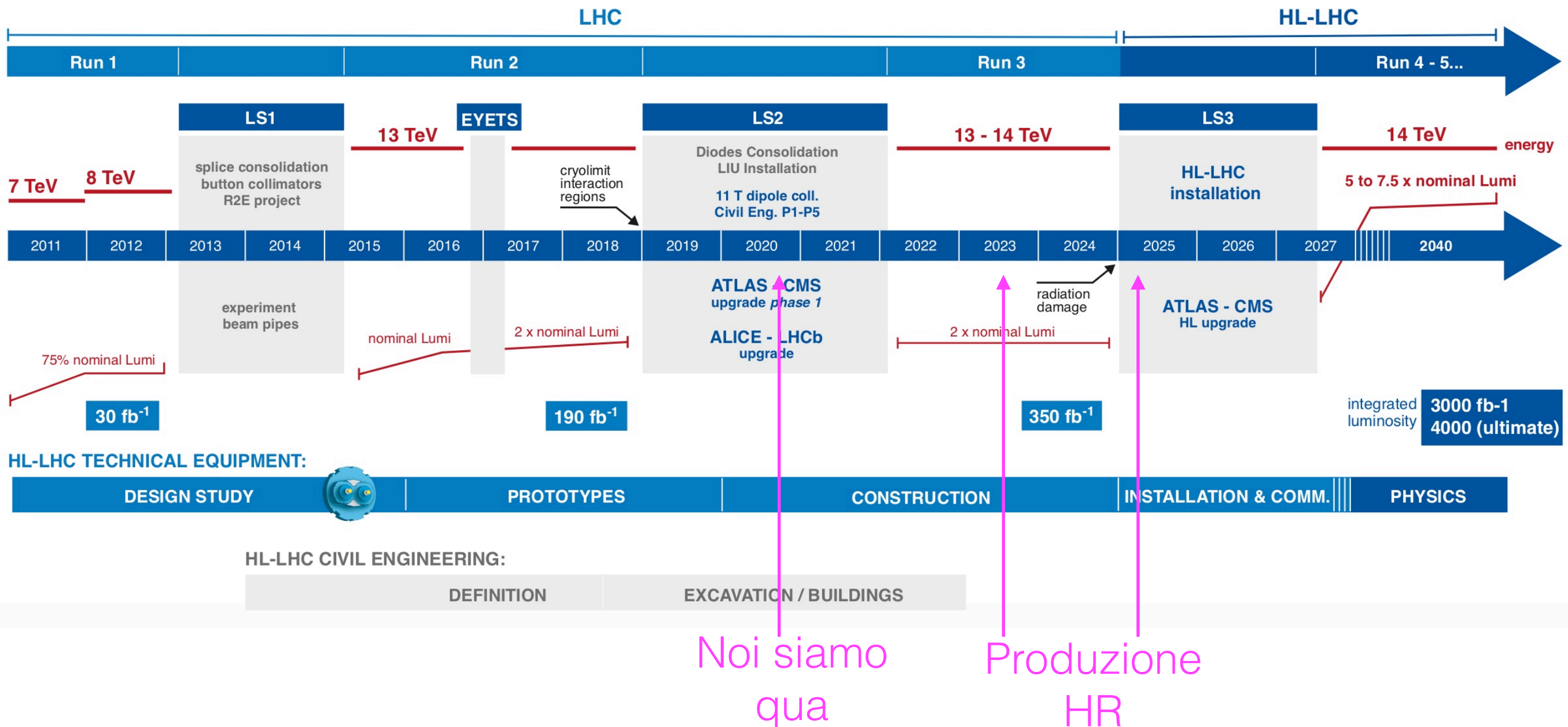
Sommario

1. Schedula ITK
2. Valutazione tempi di produzione half-ring con pick & place
3. Conteggio data link degli half-ring
4. Interconnessione elettrica quad-module e half ring
5. Impegni di Lecce non loading
6. Impegni di Lecce loading
7. Qualificazione del sito di loading

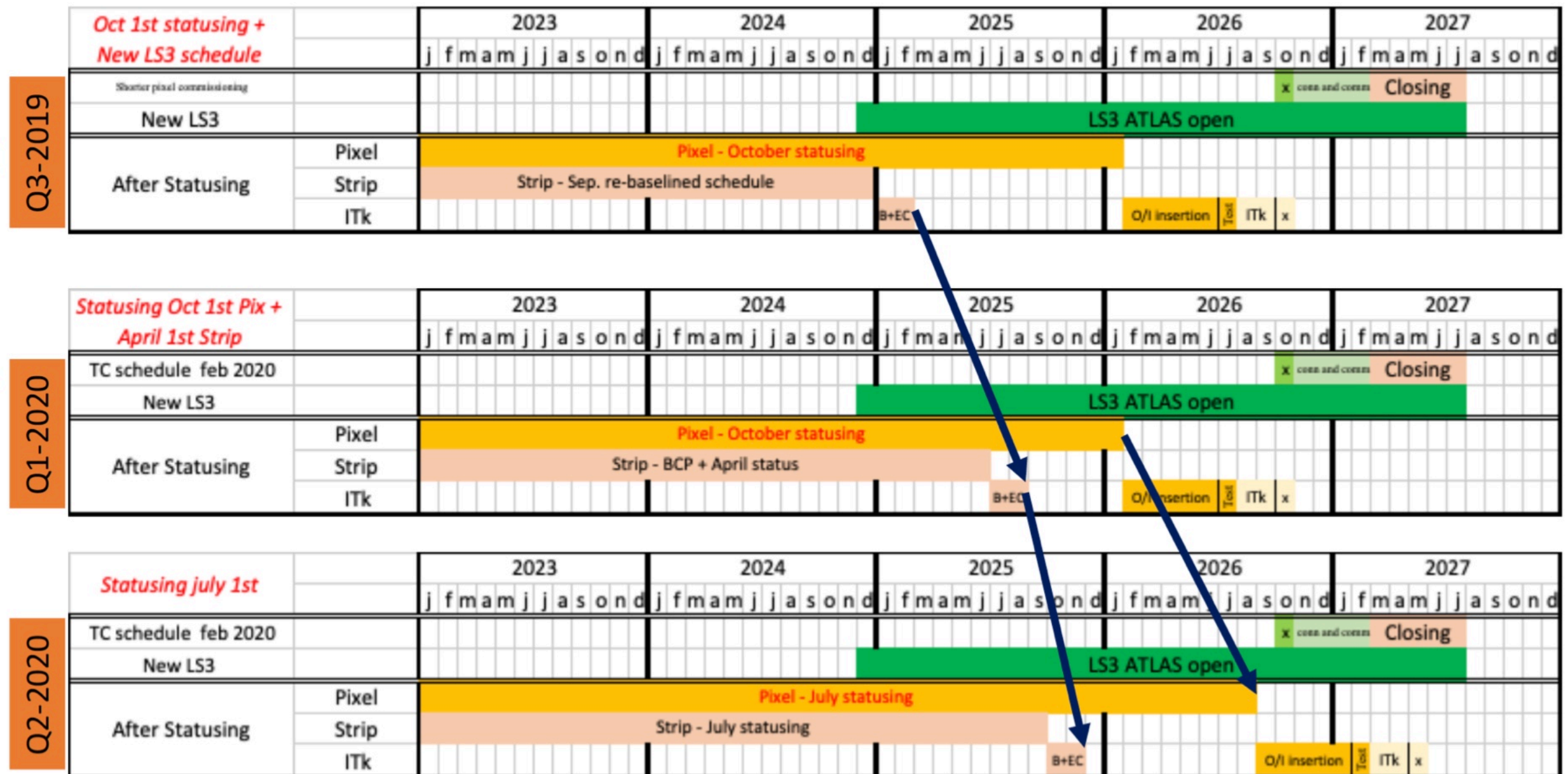
Schedula HL-LHC



LHC / HL-LHC Plan



Schedula ATLAS FASE II



Problema schedula Pixel: 7 mesi in più (floats negativo)

In assenza di altri shift temporali ITK pixel deve fornire un piano per recuperare il tempo perduto. Richiesta ai vari working group di velocizzare le operazioni previste ad esempio per il loading dei moduli sugli half-ring

Comments from ATLAS Management on the ITk project delays

ATLAS Management

- David Francis, Andreas Hoecker, Karl Jakobs, Francesco Lanni,
Ludovico Pontecorvo, Manuella Vinciter -

P2UG statements from May 2020

- *The LHCC notes the progress made in many areas across all upgrade projects, despite the difficulties due to COVID-19.*
- *The LHCC is concerned by the very small schedule contingency in the ITk-Strip project, and the absence of any remaining float in ITk-Pixel*

Input: ATLAS / CMS schedules, vetted (as far as possible) by P2UG
Machine review (will take place early November 2020)

→ This may lead to a redefined schedule, but this is not guaranteed; it depends on the machine and CMS schedules!

- If only ATLAS will be late, the CERN master schedule will most likely not be changed!
- Once CERN and the experiments commit to a schedule, it has to be respected and taken seriously.
- We cannot assume that CERN / LHC will “wait for ATLAS” at the startup of Run 4!

SCHEDULE Half Ring

ID	WBS	Type	Name	Start	Finish	Actual start	Actual finish	FreeSlack	TotalSlack	#Pre	#Suc	Done
3074	2_1_5 Local Support	Summary	EC Loading Milestones for Integration	2023-07-31	2025-01-08	-	-	0	-141	None	None	0%
3075	2_1_5 Local Support	Summary	EC L2 Rings Loading and QC Testing	2023-07-31	2024-06-03	-	-	0	-141	None	None	0%
3076	2_1_5 Local Support	Summary	EC-C (UK) L2 Rings Loading and QC Testing	2023-07-31	2024-06-03	-	-	0	-141	None	None	0%
3077	2_1_5 Local Support	P2UG	12.5% EC-C L2 Rings Loading and QC Testing Completed	2023-07-31	2023-07-31	-	-	0	-141	1	1	0%
3078	2_1_5 Local Support	Milestone	25% EC-C L2 Rings Loading and QC Testing Completed	2023-08-24	2023-08-24	-	-	0	-79	1	1	0%
3079	2_1_5 Local Support	Milestone	37.5% EC-C L2 Rings Loading and QC Testing Completed	2023-09-19	2023-09-19	-	-	0	-57	1	1	0%
3080	2_1_5 Local Support	Milestone	50% EC-C L2 Rings Loading and QC Testing Completed	2023-10-13	2023-10-13	-	-	0	-55	2	1	0%
3081	2_1_5 Local Support	Milestone	62.5% EC-C L2 Rings Loading and QC Testing Completed	2023-11-08	2023-11-08	-	-	0	-53	1	1	0%
3082	2_1_5 Local Support	Milestone	75% EC-C L2 Rings Loading and QC Testing Completed	2023-12-04	2023-12-04	-	-	0	-51	1	1	0%
3083	2_1_5 Local Support	Milestone	87.5% EC-C L2 Rings Loading and QC Testing Completed	2023-12-28	2023-12-28	-	-	0	-49	1	1	0%
3084	2_1_5 Local Support	P2UG	100% EC-C L2 Rings Loading and QC Testing Completed	2024-06-03	2024-06-03	-	-	0	-141	2	1	0%
3085	2_1_5 Local Support	Summary	EC-A (IT) L2 Rings Loading and QC Testing	2023-07-31	2024-06-03	-	-	0	-141	None	None	0%
3086	2_1_5 Local Support	P2UG	12.5% EC-A L2 Rings Loading and QC Testing Completed	2023-07-31	2023-07-31	-	-	0	-141	1	1	0%
3087	2_1_5 Local Support	Milestone	25% EC-A L2 Rings Loading and QC Testing Completed	2023-08-24	2023-08-24	-	-	0	-79	1	1	0%
3088	2_1_5 Local Support	Milestone	37.5% EC-A L2 Rings Loading and QC Testing Completed	2023-09-19	2023-09-19	-	-	0	-57	1	1	0%
3089	2_1_5 Local Support	Milestone	50% EC-A L2 Rings Loading and QC Testing Completed	2023-10-13	2023-10-13	-	-	0	-55	2	1	0%
3090	2_1_5 Local Support	Milestone	62.5% EC-A L2 Rings Loading and QC Testing Completed	2023-11-08	2023-11-08	-	-	0	-53	1	1	0%
3091	2_1_5 Local Support	Milestone	75% EC-A L2 Rings Loading and QC Testing Completed	2023-12-04	2023-12-04	-	-	0	-51	1	1	0%
3092	2_1_5 Local Support	Milestone	87.5% EC-A L2 Rings Loading and QC Testing Completed	2023-12-28	2023-12-28	-	-	0	-49	1	1	0%
3093	2_1_5 Local Support	P2UG	100% EC-A L2 Rings Loading and QC Testing Completed	2024-06-03	2024-06-03	-	-	0	-141	2	1	0%
3094	2_1_5 Local Support	Summary	EC L3 Rings Loading and QC Testing	2024-02-08	2024-12-24	-	-	0	-37	None	None	0%
3095	2_1_5 Local Support	Summary	EC-C L3 (UK) Rings Loading and QC Testing	2024-02-08	2024-06-05	-	-	20	20	None	None	0%
3096	2_1_5 Local Support	P2UG	12.5% EC-C L3 Rings Loading and QC Testing Completed	2024-02-08	2024-02-08	-	-	0	20	1	1	0%
3097	2_1_5 Local Support	Milestone	25% EC-C L3 Rings Loading and QC Testing Completed	2024-02-26	2024-02-26	-	-	0	28	1	1	0%
3098	2_1_5 Local Support	Milestone	37.5% EC-C L3 Rings Loading and QC Testing Completed	2024-03-13	2024-03-13	-	-	0	36	1	1	0%
3099	2_1_5 Local Support	Milestone	50% EC-C L3 Rings Loading and QC Testing Completed	2024-03-29	2024-03-29	-	-	0	34	2	1	0%
3100	2_1_5 Local Support	Milestone	62.5% EC-C L3 Rings Loading and QC Testing Completed	2024-04-16	2024-04-16	-	-	0	32	1	1	0%
3101	2_1_5 Local Support	Milestone	75% EC-C L3 Rings Loading and QC Testing Completed	2024-05-02	2024-05-02	-	-	0	30	1	1	0%
3102	2_1_5 Local Support	Milestone	87.5% EC-C L3 Rings Loading and QC Testing Completed	2024-05-20	2024-05-20	-	-	0	28	1	1	0%
3103	2_1_5 Local Support	P2UG	100% EC-C L3 Rings Loading and QC Testing Completed	2024-06-05	2024-06-05	-	-	0	26	2	1	0%
3104	2_1_5 Local Support	Summary	EC-A (IT) L3 Rings Loading and QC Testing	2024-08-22	2024-12-24	-	-	0	-37	None	None	0%
3105	2_1_5 Local Support	P2UG	12.5% EC-A L3 Rings Loading and QC Testing Completed	2024-08-22	2024-08-22	-	-	0	-19	1	1	0%
3106	2_1_5 Local Support	Milestone	25% EC-A L3 Rings Loading and QC Testing Completed	2024-09-09	2024-09-09	-	-	0	-21	1	1	0%
3107	2_1_5 Local Support	Milestone	37.5% EC-A L3 Rings Loading and QC Testing Completed	2024-09-25	2024-09-25	-	-	0	-23	1	1	0%
3108	2_1_5 Local Support	Milestone	50% EC-A L3 Rings Loading and QC Testing Completed	2024-10-11	2024-10-11	-	-	0	-25	2	1	0%
3109	2_1_5 Local Support	Milestone	62.5% EC-A L3 Rings Loading and QC Testing Completed	2024-10-29	2024-10-29	-	-	0	-27	1	1	0%
3110	2_1_5 Local Support	Milestone	75% EC-A L3 Rings Loading and QC Testing Completed	2024-11-14	2024-11-14	-	-	0	-29	1	1	0%
3111	2_1_5 Local Support	Milestone	87.5% EC-A L3 Rings Loading and QC Testing Completed	2024-12-06	2024-12-06	-	-	0	-35	1	1	0%
3112	2_1_5 Local Support	P2UG	100% EC-A L3 Rings Loading and QC Testing Completed	2024-12-24	2024-12-24	-	-	0	-37	1	1	0%
3113	2_1_5 Local Support	Summary	EC L4 Rings Loading and QC Testing	2024-02-14	2025-01-08	-	-	11	11	None	None	0%
3114	2_1_5 Local Support	Summary	EC-C (UK) L4 Rings Loading and QC Testing	2024-07-23	2025-01-08	-	-	11	11	None	None	0%
3115	2_1_5 Local Support	P2UG	12.5% EC-C L4 Rings Loading and QC Testing Completed	2024-07-23	2024-07-23	-	-	0	62	1	1	0%
3116	2_1_5 Local Support	Milestone	25% EC-C L4 Rings Loading and QC Testing Completed	2024-08-13	2024-08-13	-	-	0	57	1	1	0%
3117	2_1_5 Local Support	Milestone	37.5% EC-C L4 Rings Loading and QC Testing Completed	2024-09-17	2024-09-17	-	-	0	42	1	1	0%
3118	2_1_5 Local Support	Milestone	50% EC-C L4 Rings Loading and QC Testing Completed	2024-10-08	2024-10-08	-	-	0	37	2	1	0%
3119	2_1_5 Local Support	Milestone	62.5% EC-C L4 Rings Loading and QC Testing Completed	2024-11-06	2024-11-06	-	-	0	26	1	1	0%
3120	2_1_5 Local Support	Milestone	75% EC-C L4 Rings Loading and QC Testing Completed	2024-11-27	2024-11-27	-	-	0	21	1	1	0%
3121	2_1_5 Local Support	Milestone	87.5% EC-C L4 Rings Loading and QC Testing Completed	2024-12-18	2024-12-18	-	-	0	16	1	1	0%
3122	2_1_5 Local Support	P2UG	100% EC-C L4 Rings Loading and QC Testing Completed	2025-01-08	2025-01-08	-	-	0	11	2	1	0%
3123	2_1_5 Local Support	Summary	EC-A (IT) L4 Rings Loading and QC Testing	2024-02-14	2024-07-29	-	-	0	-11	None	None	0%
3124	2_1_5 Local Support	P2UG	12.5% EC-A L4 Rings Loading and QC Testing Completed	2024-02-14	2024-02-14	-	-	0	16	1	1	0%
3125	2_1_5 Local Support	Milestone	25% EC-A L4 Rings Loading and QC Testing Completed	2024-03-06	2024-03-06	-	-	0	21	1	1	0%
3126	2_1_5 Local Support	Milestone	37.5% EC-A L4 Rings Loading and QC Testing Completed	2024-04-05	2024-04-05	-	-	0	19	1	1	0%
3127	2_1_5 Local Support	Milestone	50% EC-A L4 Rings Loading and QC Testing Completed	2024-04-26	2024-04-26	-	-	0	14	2	1	0%
3128	2_1_5 Local Support	Milestone	62.5% EC-A L4 Rings Loading and QC Testing Completed	2024-05-27	2024-05-27	-	-	0	3	1	1	0%
3129	2_1_5 Local Support	Milestone	75% EC-A L4 Rings Loading and QC Testing Completed	2024-06-17	2024-06-17	-	-	0	-1	1	1	0%
3130	2_1_5 Local Support	Milestone	87.5% EC-A L4 Rings Loading and QC Testing Completed	2024-07-08	2024-07-08	-	-	0	-6	1	1	0%
3131	2_1_5 Local Support	P2UG	100% EC-A L4 Rings Loading and QC Testing Completed	2024-07-29	2024-07-29	-	-	0	-11	2	1	0%

EndCap Loading for Half shell Integration: Agosto 2023 - Gennaio 2025

SCHEDULA Half Ring L2

Summary	EC L2 Rings Loading and QC Testing	2023-07-31	2024-06-03
Summary	EC-C (UK) L2 Rings Loading and QC Testing	2023-07-31	2024-06-03
P2UG	12.5% EC-C L2 Rings Loading and QC Testing Completed	2023-07-31	2023-07-31
Milestone	25% EC-C L2 Rings Loading and QC Testing Completed	2023-08-24	2023-08-24
Milestone	37.5% EC-C L2 Rings Loading and QC Testing Completed	2023-09-19	2023-09-19
Milestone	50% EC-C L2 Rings Loading and QC Testing Completed	2023-10-13	2023-10-13
Milestone	62.5% EC-C L2 Rings Loading and QC Testing Completed	2023-11-08	2023-11-08
Milestone	75% EC-C L2 Rings Loading and QC Testing Completed	2023-12-04	2023-12-04
Milestone	87.5% EC-C L2 Rings Loading and QC Testing Completed	2023-12-28	2023-12-28
P2UG	100% EC-C L2 Rings Loading and QC Testing Completed	2024-06-03	2024-06-03
Summary	EC-A (IT) L2 Rings Loading and QC Testing	2023-07-31	2024-06-03
P2UG	12.5% EC-A L2 Rings Loading and QC Testing Completed	2023-07-31	2023-07-31
Milestone	25% EC-A L2 Rings Loading and QC Testing Completed	2023-08-24	2023-08-24
Milestone	37.5% EC-A L2 Rings Loading and QC Testing Completed	2023-09-19	2023-09-19
Milestone	50% EC-A L2 Rings Loading and QC Testing Completed	2023-10-13	2023-10-13
Milestone	62.5% EC-A L2 Rings Loading and QC Testing Completed	2023-11-08	2023-11-08
Milestone	75% EC-A L2 Rings Loading and QC Testing Completed	2023-12-04	2023-12-04
Milestone	87.5% EC-A L2 Rings Loading and QC Testing Completed	2023-12-28	2023-12-28
P2UG	100% EC-A L2 Rings Loading and QC Testing Completed	2024-06-03	2024-06-03

Half shell L2: 11 HR

L2 HR: 8 moduli / lato, 1 Serial Power per lato

Agosto 2023 - Maggio 2024

SCHEDULA Half Ring L3

Summary	EC L3 Rings Loading and QC Testing	2024-02-08	2024-12-24
Summary	EC-C L3 (UK) Rings Loading and QC Testing	2024-02-08	2024-06-05
P2UG	12.5% EC-C L3 Rings Loading and QC Testing Completed	2024-02-08	2024-02-08
Milestone	25% EC-C L3 Rings Loading and QC Testing Completed	2024-02-26	2024-02-26
Milestone	37.5% EC-C L3 Rings Loading and QC Testing Completed	2024-03-13	2024-03-13
Milestone	50% EC-C L3 Rings Loading and QC Testing Completed	2024-03-29	2024-03-29
Milestone	62.5% EC-C L3 Rings Loading and QC Testing Completed	2024-04-16	2024-04-16
Milestone	75% EC-C L3 Rings Loading and QC Testing Completed	2024-05-02	2024-05-02
Milestone	87.5% EC-C L3 Rings Loading and QC Testing Completed	2024-05-20	2024-05-20
P2UG	100% EC-C L3 Rings Loading and QC Testing Completed	2024-06-05	2024-06-05
Summary	EC-A (IT) L3 Rings Loading and QC Testing	2024-08-22	2024-12-24
P2UG	12.5% EC-A L3 Rings Loading and QC Testing Completed	2024-08-22	2024-08-22
Milestone	25% EC-A L3 Rings Loading and QC Testing Completed	2024-09-09	2024-09-09
Milestone	37.5% EC-A L3 Rings Loading and QC Testing Completed	2024-09-25	2024-09-25
Milestone	50% EC-A L3 Rings Loading and QC Testing Completed	2024-10-11	2024-10-11
Milestone	62.5% EC-A L3 Rings Loading and QC Testing Completed	2024-10-29	2024-10-29
Milestone	75% EC-A L3 Rings Loading and QC Testing Completed	2024-11-14	2024-11-14
Milestone	87.5% EC-A L3 Rings Loading and QC Testing Completed	2024-12-06	2024-12-06
P2UG	100% EC-A L3 Rings Loading and QC Testing Completed	2024-12-24	2024-12-24
		2024-02-14	2025-01-08

Half shell L3: 8 HR

L2 HR: 11 moduli / lato, 1 Serial Power per lato

Agosto 2024 - Dicembre 2024

SCHEDULA Half Ring L4

Summary	EC L4 Rings Loading and QC Testing	2024-02-14	2025-01-08
Summary	EC-C (UK) L4 Rings Loading and QC Testing	2024-07-23	2025-01-08
P2UG	12.5% EC-C L4 Rings Loading and QC Testing Completed	2024-07-23	2024-07-23
Milestone	25% EC-C L4 Rings Loading and QC Testing Completed	2024-08-13	2024-08-13
Milestone	37.5% EC-C L4 Rings Loading and QC Testing Completed	2024-09-17	2024-09-17
Milestone	50% EC-C L4 Rings Loading and QC Testing Completed	2024-10-08	2024-10-08
Milestone	62.5% EC-C L4 Rings Loading and QC Testing Completed	2024-11-06	2024-11-06
Milestone	75% EC-C L4 Rings Loading and QC Testing Completed	2024-11-27	2024-11-27
Milestone	87.5% EC-C L4 Rings Loading and QC Testing Completed	2024-12-18	2024-12-18
P2UG	100% EC-C L4 Rings Loading and QC Testing Completed	2025-01-08	2025-01-08
Summary	EC-A (IT) L4 Rings Loading and QC Testing	2024-02-14	2024-07-29
P2UG	12.5% EC-A L4 Rings Loading and QC Testing Completed	2024-02-14	2024-02-14
Milestone	25% EC-A L4 Rings Loading and QC Testing Completed	2024-03-06	2024-03-06
Milestone	37.5% EC-A L4 Rings Loading and QC Testing Completed	2024-04-05	2024-04-05
Milestone	50% EC-A L4 Rings Loading and QC Testing Completed	2024-04-26	2024-04-26
Milestone	62.5% EC-A L4 Rings Loading and QC Testing Completed	2024-05-27	2024-05-27
Milestone	75% EC-A L4 Rings Loading and QC Testing Completed	2024-06-17	2024-06-17
Milestone	87.5% EC-A L4 Rings Loading and QC Testing Completed	2024-07-08	2024-07-08
P2UG	100% EC-A L4 Rings Loading and QC Testing Completed	2024-07-29	2024-07-29

Half shell L4: 9 HR

L2 HR: 13 moduli / lato, 1 Serial Power per lato

Febbraio 2024 - Gennaio 2025

Basic assumption 1: one module at the time

RAL bridge or GE Pick&Place agnostic

Keep glue preparation and deposition simple

1. One glue syringe and elliptical tube mixer per module:
 - No glue freezing, no planetary mixer, simple filling procedure, reproducible glue.
 - Yes 10 minutes vacuum and Test deposition before and after
3. Loading time 2.5 h per module: 0.5 h for preparation + 2 h for glue “handling strength” (see S. Passaggio talk: https://indico.cern.ch/event/946599/contributions/3989266/attachments/2092293/3515870/Module_Loading_for_ITk_Pixel_OEC_with_PickAndPlace_Technique.pdf)
5. Glue height fixed by Pick&Place head gauged strength (Otherwise glue pillars).
6. Three Modules per working days
7. Turn half ring completed side only after overnight curing

Basic assumption 2: almost parallelised work flow

Assumptions:

- During the glue “handling strength” time we have to accomplish all the other tasks that doesn't need the Gantry: Reception tests + EOS card gluing + (Pillar deposition if needed) + interconnection + QC tests + data analysis.
- Other tasks which need the Gantry must be automatised and done overnight: metrology.
- Others tasks which need the Gantry and can not be automatised add to the total time (0.5 hour / day left).

HR loading rate per IT site

1. Three modules per working days
2. One complete half ring side must be cured at least overnight
3. Inner HR half side in three days (8 modules) $\times 22 \rightarrow 14$ working week (3.5 months) per loading site.
4. Middle HR half side in four days (11 modules) $\times 16 \rightarrow 13$ working week (3.25 months) per loading site
5. Outer HR half side in five days (13 modules) $\times 18 \rightarrow 18$ working week (4.5 months) per loading site
6. Total time per loading site: 11.25 months + 2.5 months reworking + 1 month holiday = 14.75 months

Estimated total time per loading site: 14.75 months

Possible manpower organisation

Best way to use Gantry waiting time:

1) One Physicist + One Technician (or engineer) per working day in clean chamber working together

2) More realistically: Two teams of One Physicist + One Technician (or engineer) not full time on loading and not overlapping in time

3) Improve speed by increasing the hours per day per team:

- inner: four module/day, one HR half side in two days (8 modules) x 22 → 9 working week (2.25 months) per loading site.

- middle: four module/day, one HR half side in three days (11 modules) x 16 → 10 working week (2.5 months) per loading site

- outer: five module/day, one HR half side in three days (13 modules) x 18 → 11 working week (2.75 months) per loading site

- total time per loading site: 7.5 months + 2.5 months reworking + 1 month holiday = 11 months

Estimated total time per loading site: 11 months

Parallel Workflow

RAL time estimates

Line 4870 Endcap-C Loading and QC testing 31/07/2023 – 08/01/2025 (377 days)

Line 4950 Endcap-A Loading and QC testing 31/07/2023 – 24/12/2024 (366 days)

These figures don't include staff holidays !

Task	Inner	Middle	Outer
Reception half-rings	22	16	18
Dots and EOS	22	16	18
Module reception	12	14	18
Module mechanical	8	9	13
Module Loading	40	64	72
Interconnect	14	16	23
Metrology	6	6	8
Electrical test	40	32	36
Re work	What would re work be ? 1172 modules 2% failure 2 days per module => 48 days ?		
	164	173	206

Overnight not considered

RAL Module loading time fraction

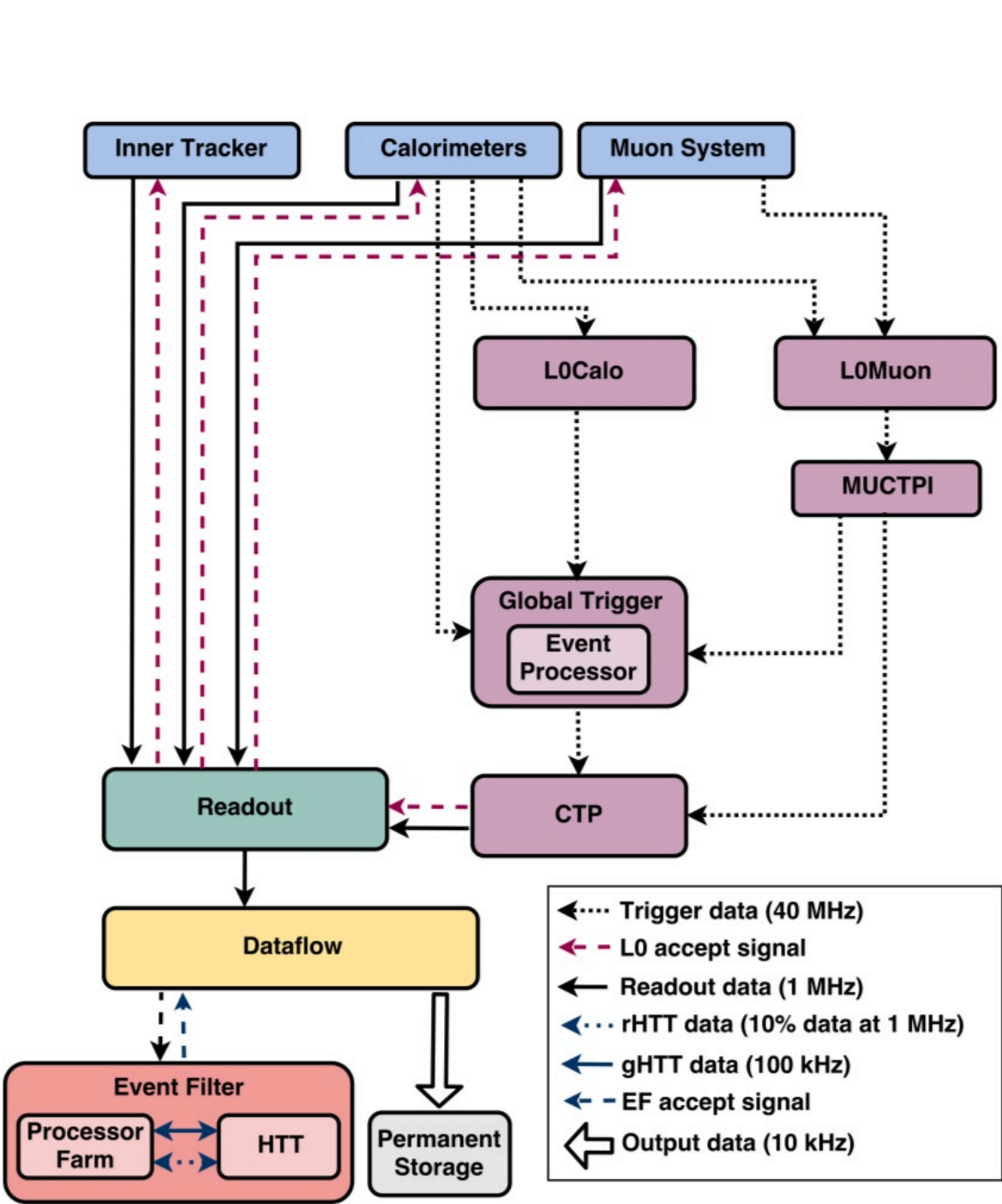
25%

38%

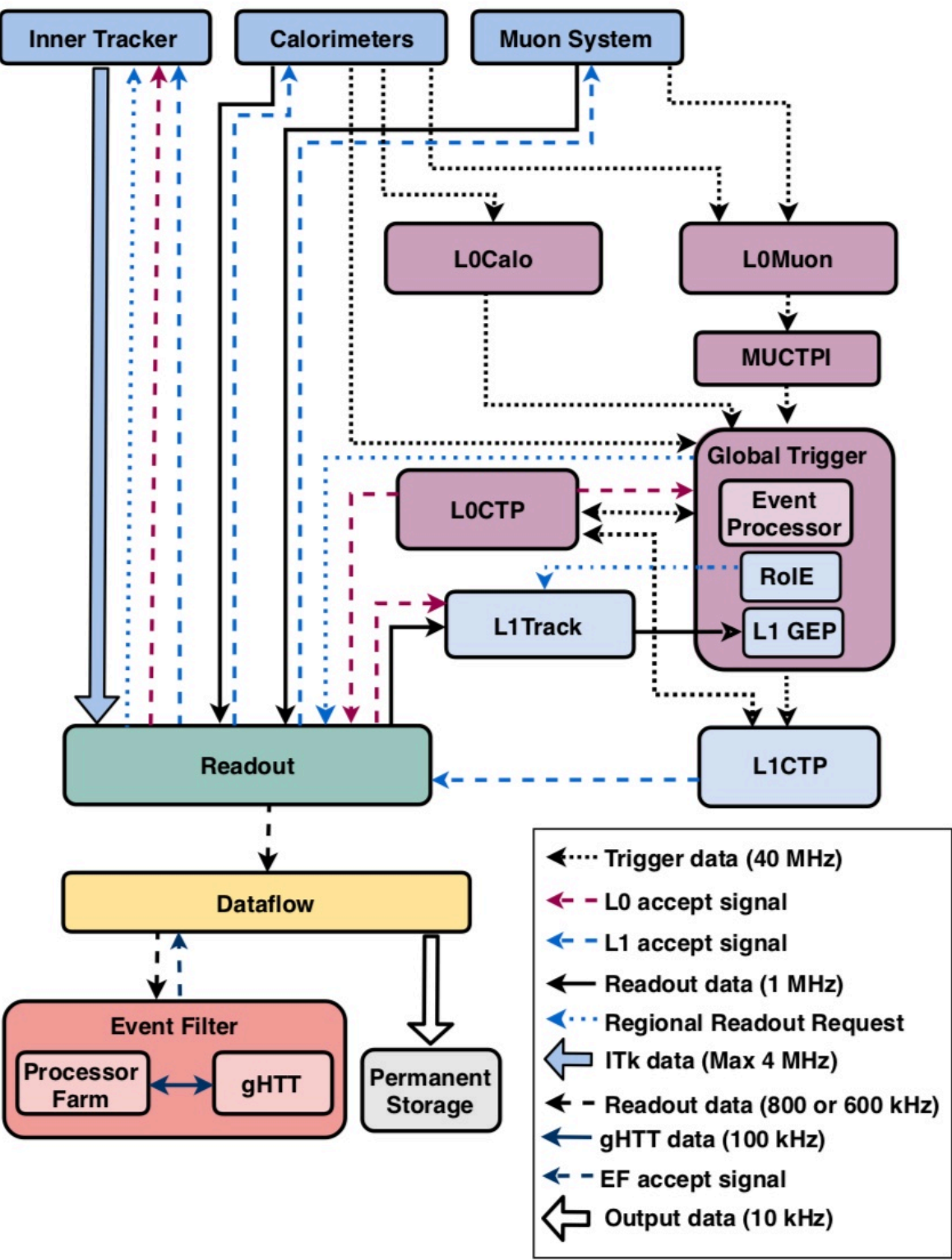
38%

IT Module loading time fraction = $3 \times 0.5 \text{ hours} / 8 \text{ hours} = 19 \%$ seems OK.

ATLAS CB ha deciso il trigger l'opzione L0 everywhere eliminando l'opzione L0/L1



(a) TDAQ single-level hardware trigger architecture.



(b) Evolved two-level hardware trigger architecture.

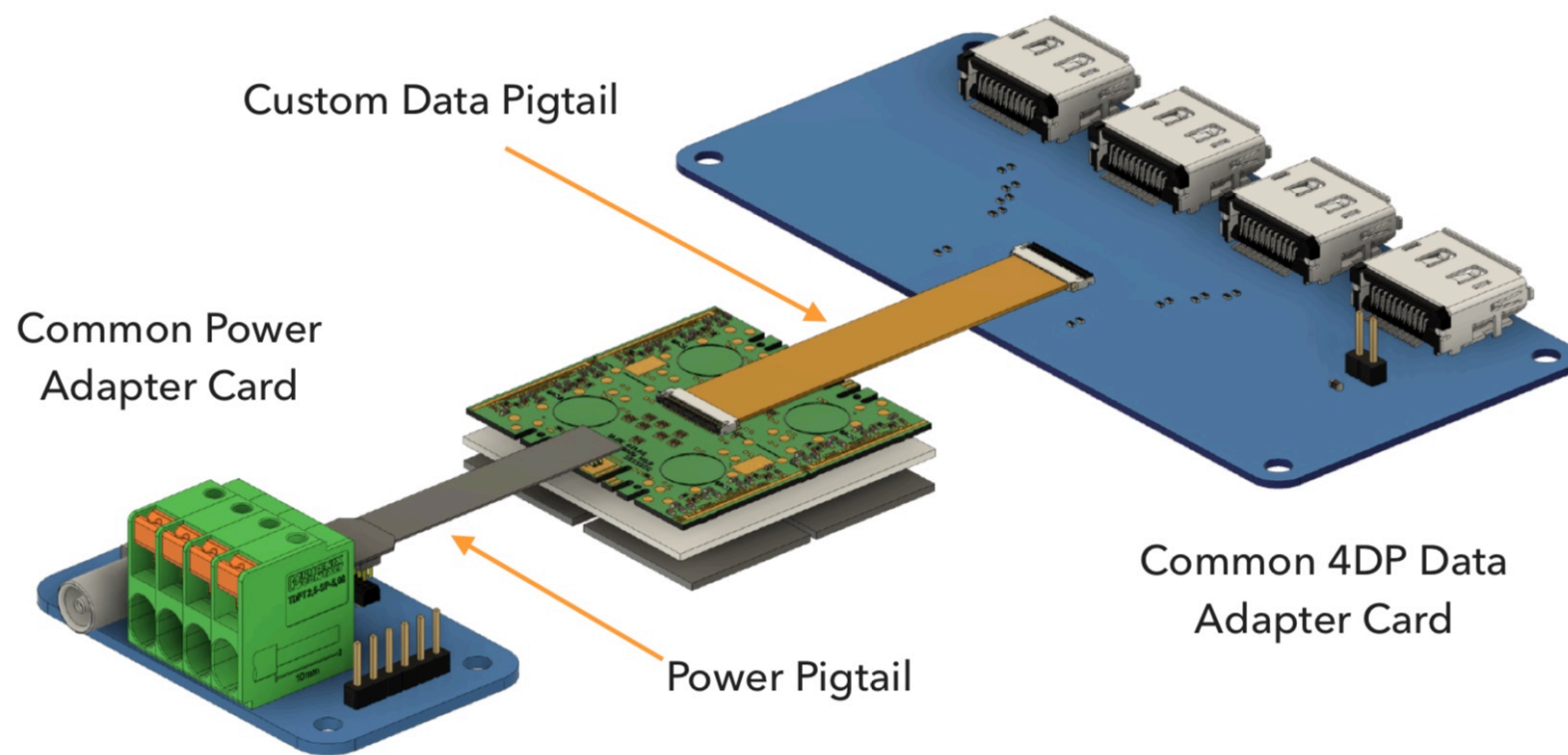
Implicazione decisione di readout da 4 MHz a 1 MHz

□ EC data links per half ring for the 1MHz readout:

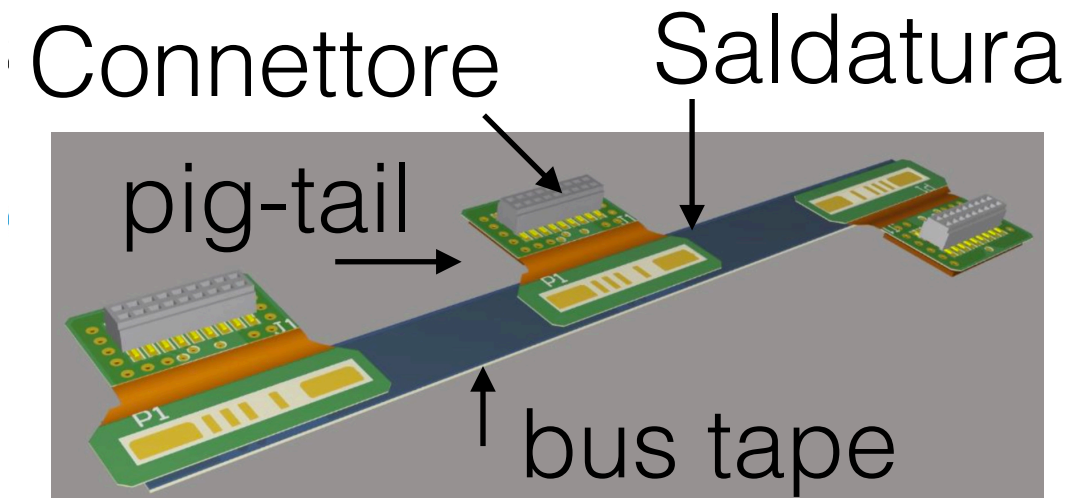
half rings:	modules/ SP-chain	data link/ module	cmd link/ module	data link/ SP-chain	data link/ half-ring	tests/ half ring
– L2 R1-5:	8	2	1	16	32	2
– L2 R6-11:	8	4	1	32	64	3
– L3 R1-8:	11	2	1	22	44	2
– L4 R1-7:	13	1	1	13	26	2
– L4 R8-9:	13	2	1	26	52	3

Felix fase 1 ha 24 data link e 24 cmd link.

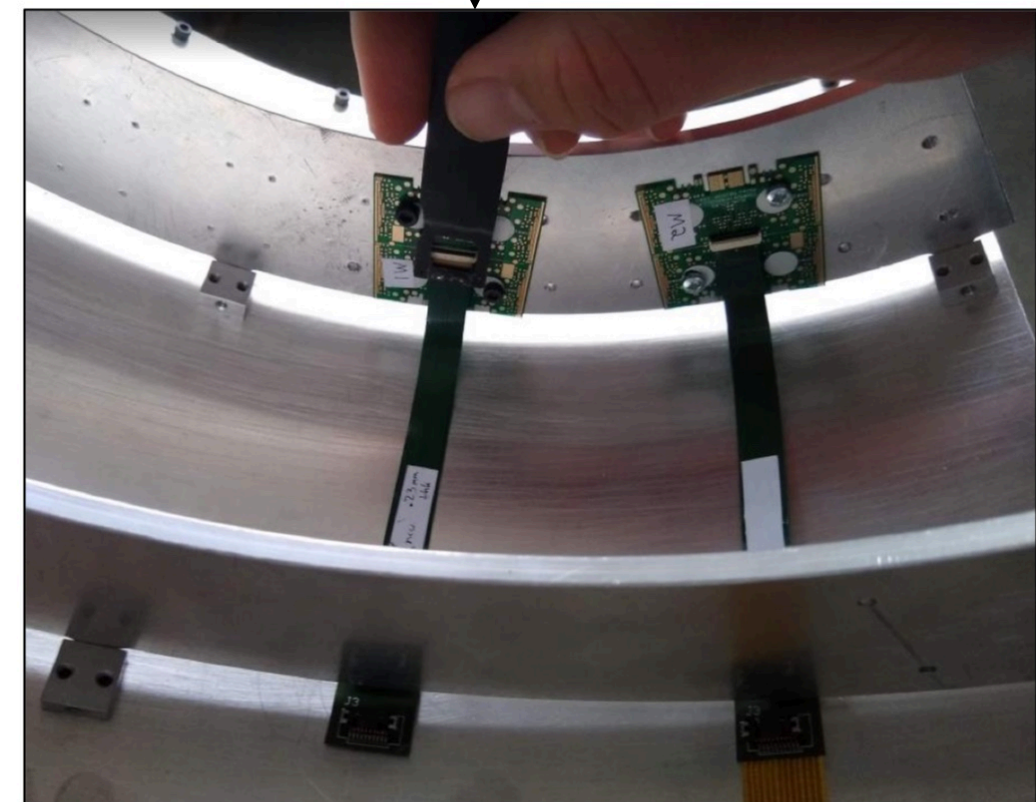
Interconnessione con Quad-Module-HR



Il quad module è 4 cm x 4cm circa.
Ha due connettori e due pig-tails: dati + LV/HV/NTC
La pig-tail LV/HV/NTC ha un solo connettore lato modulo e sull'altro lato dovrà essere saldata sul bus tape del half-ring e gli italiani vorrebbero realizzare a mano le saldature.
La pig-tail ha connettori su entrambi i lati dovrà essere inserita dal lato modulo con un insertion tool per non danneggiare il sensore.



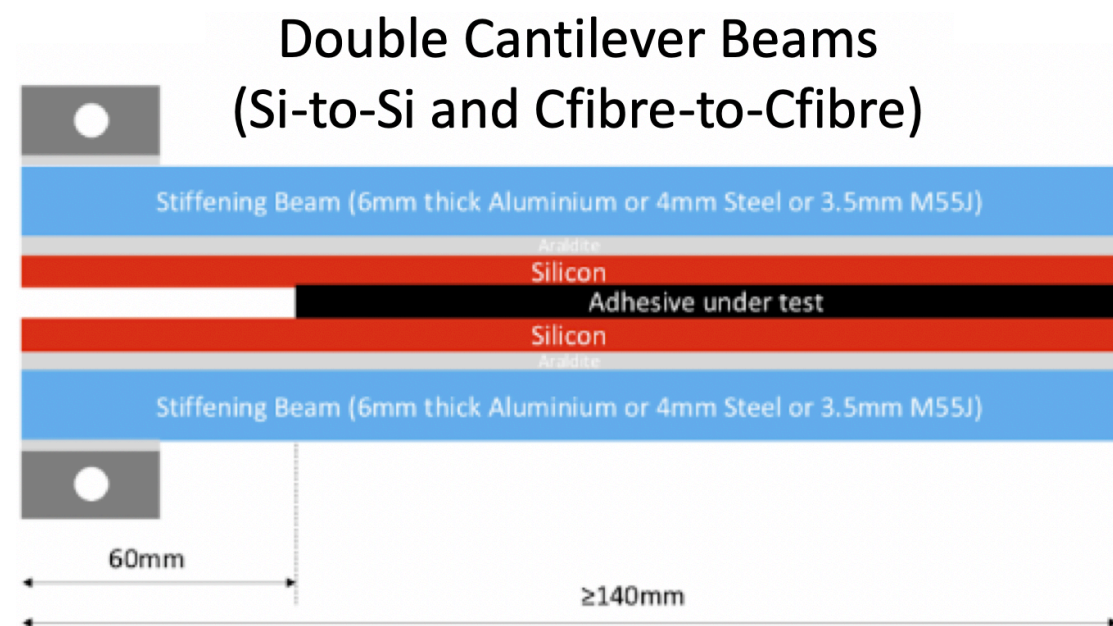
Insertion tool



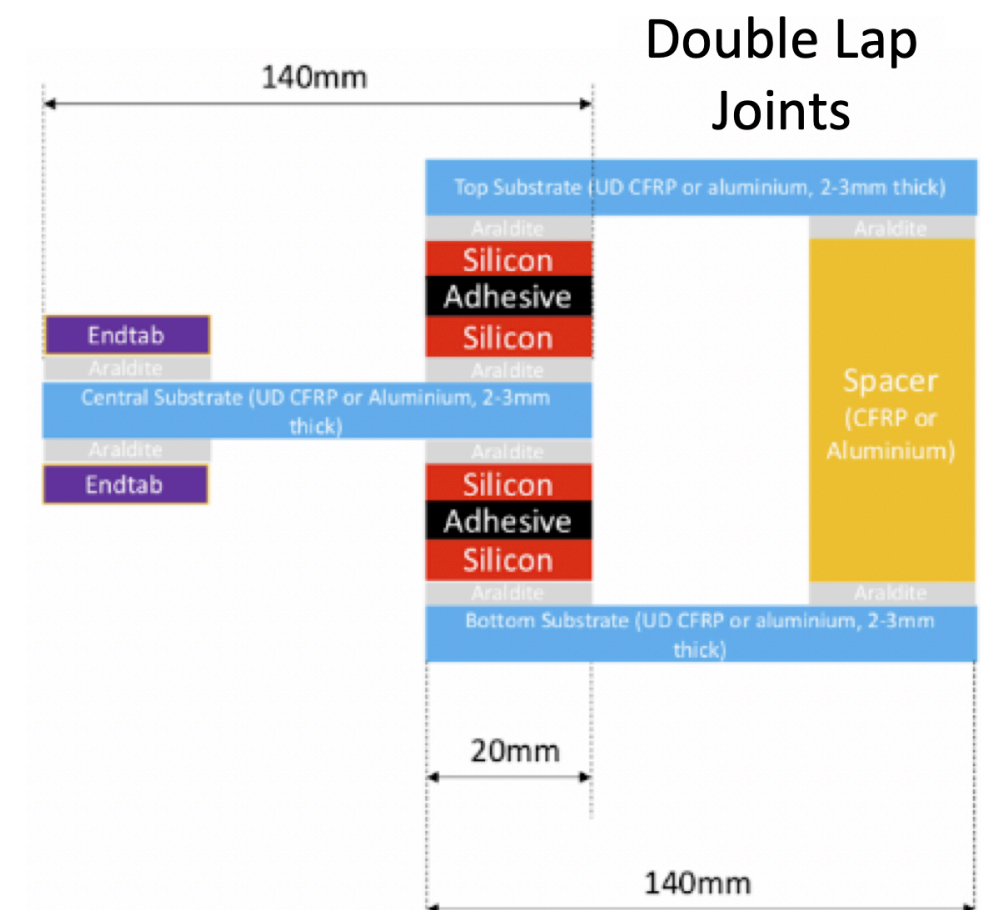
Pigtail insertion on mockup between L2 R10 and R11 (smallest gap)

Impegni di Lecce: not loading

- Realizzazione handling frame (A. Miccoli)
- Realizzazione storage/test box per half-ring (M.R. Coluccia)
- Preparazione di 160 (13cmx2cm) + 320 (2 cm x 2cm) tile di silicio per la qualificazione della colla da usare per incollare quad-moduli agli half-ring in collaborazione con il gruppo dei pixel interni (USA) e il CERN. :
 - 4 colle
 - 4 irraggiamenti
 - 5 campioni ognuno



Misurare la “Fracture energy”



Misurare la “shear strength”

Impegni di Lecce: Loading

- Rimettere in funzione la camera pulita, tenerla funzionante.
Richiesto monitoraggio online T. H e purezza aria
- Installare il gantry in camera pulita (atteso per Novembre)
- Equipaggiare gantry con strumentazione di loading e sviluppare il software.
- Installare il sistema di raffreddamento bifase a CO2 denominato Marta (appeso per metà 2021)
- Installare sistema di generazione aria secca (compressore oil free + essiccatore)
- Sviluppare sistema DCS per test half-ring
- Sviluppare DAQ per test half-ring
- Qualificazione sito di loading entro fine 2021

Site qualification steps

Pre qualification: A site to be qualified must have all the tools for assembly and the setup for test and qualification. Furthermore a site must have also tested the complete set of procedures on the pre-production half-ring having obtained results according to specification for at least 5 modules.

Initial qualification: When a site is pre-qualified it is allowed to build a full half-ring with no more than two extra modules.

Full qualification: The full qualification is achieved on the results obtained in the initial production phase. The sites that will receive the full qualification can do the rest of the production.

Procedures

1.Assembly Procedure

- 1.Bus tape receiving test
- 2.EOS receiving test
- 3.Module receiving test
- 4.Module removal from carrier
- 5.Module loading on half ring
- 6.Half ring interconnect
- 7.Module quick tests on half ring

2.Qualification Procedure

- 1.Geometrical qualification.
- 2.Thermal qualification
- 3.Electrical qualification
- 4.Classification

3.Storing

- 1.Module storage.
- 2.Half ring storage

4.Clean room and handling precautions

5.Shipment

6.Production Data Base

7.Reworking

8.Log sheets

Summary

Anno 2021	: Qualificazione del sito
Anno 2022	: Preproduzione
Anno 2023	: Produzione
Anno 2024	: Produzione

Durante la produzione almeno due squadre di due persone al 50% del tempo ma sfasate di qualche ora per ottimizzare la tempistica di produzione degli half-ring.