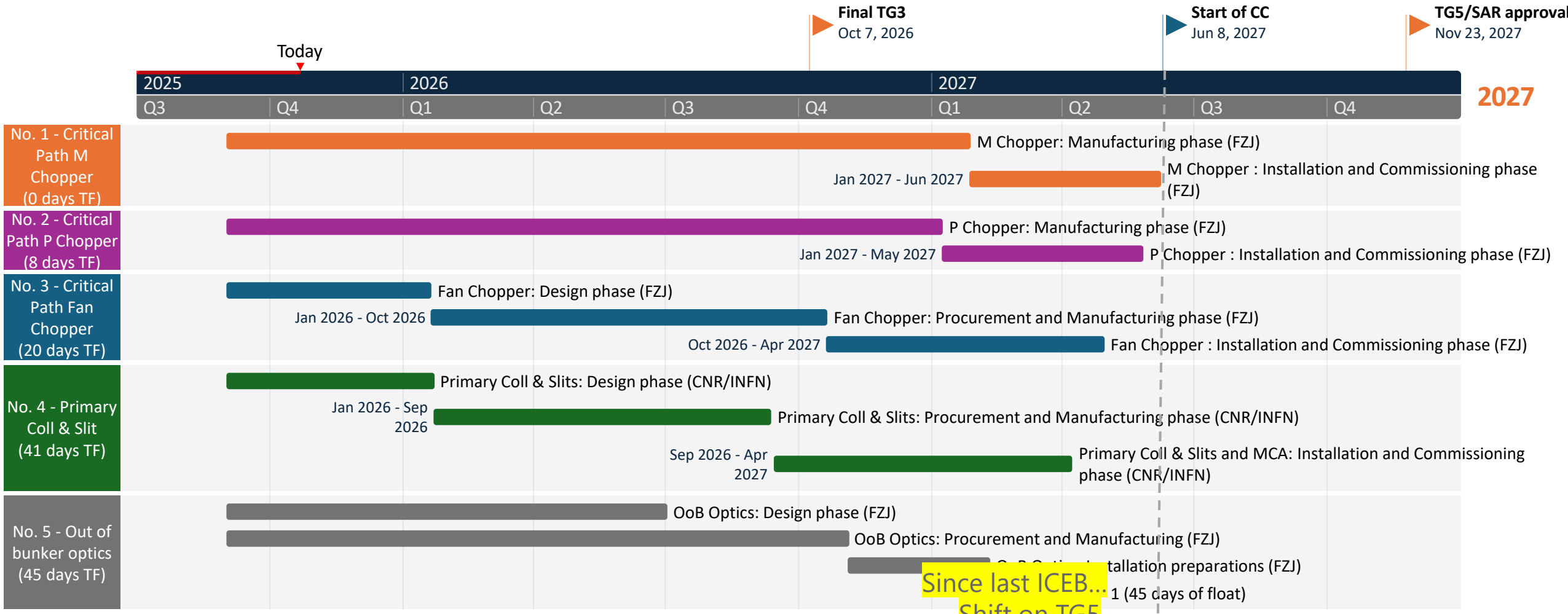
NSS Replanning Evaluation

TREX ICEB

2025-11-04

TREX Critical Paths

Data from P6 September 2025 lockdown



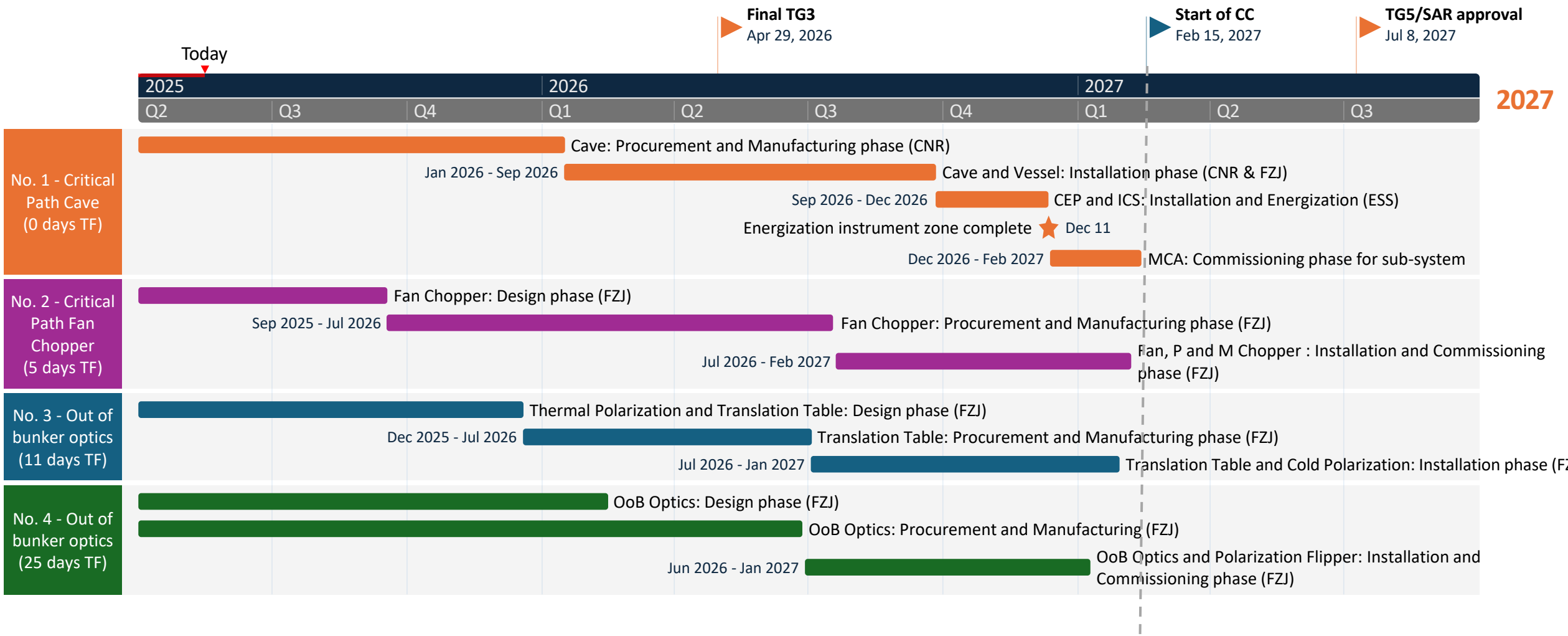
Since last ICEB…

- Shift on TG5
- Cave no longer on top critical path onger top 5 CP
- 3 new deliverables on top critical paths (M les) is part of chopper, P chopper and primary collimator & slits

Design phase ends at CDR approval
Procurement and Manufacturing phase ends at FAT closure of open points
Installation and Commissioning phase ends at SAT approval
TF: number days of **total float** to Instrument's TG5

TREX Critical Paths

Data from P6 April 2025 Lockdown



Design phase ends at CDR approval
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Note: MG detector boxes 2-4 (including 18 modules) is part of the instrument scope but currently not linked to TG5 in P6. MG Detector box 1 (including 6 modules) has 91 days of float

Key milestones (as shown in dashboard)

Delays on all key milestones since the replanning

Activity Title	December 2024 (replanning)	Previous Period End	Current Period End	Variance from September 2024	Variance in period
T-REX: Final TG3 meeting	03-mar-26	12-jun-26	10-sep-26	106	43
T-REX: Ready for cold Commissioning	02-feb-27	25-mar-27	08-jun-27	86	49
T-REX: TG5	23-jun-27	17-aug-27	23-nov-27	88	70
T-REX: Fan Chopper: Local SAT	07-apr-22	25-nov-26	25-jan-27	1072	33
T-REX: Primary Coll & Slits: Local SAT	15-sep-26	27-jan-27	01-feb-27	89	3
T-REX: Detector Vessel + MG.TREX.1: Integrated SAT	10-jul-26	10-feb-27	01-mar-27	136	13
T-REX: Secondary RC: Installation	02-jul-26	29-sep-26	29-sep-26	43	0

Key milestones > 4 months delay

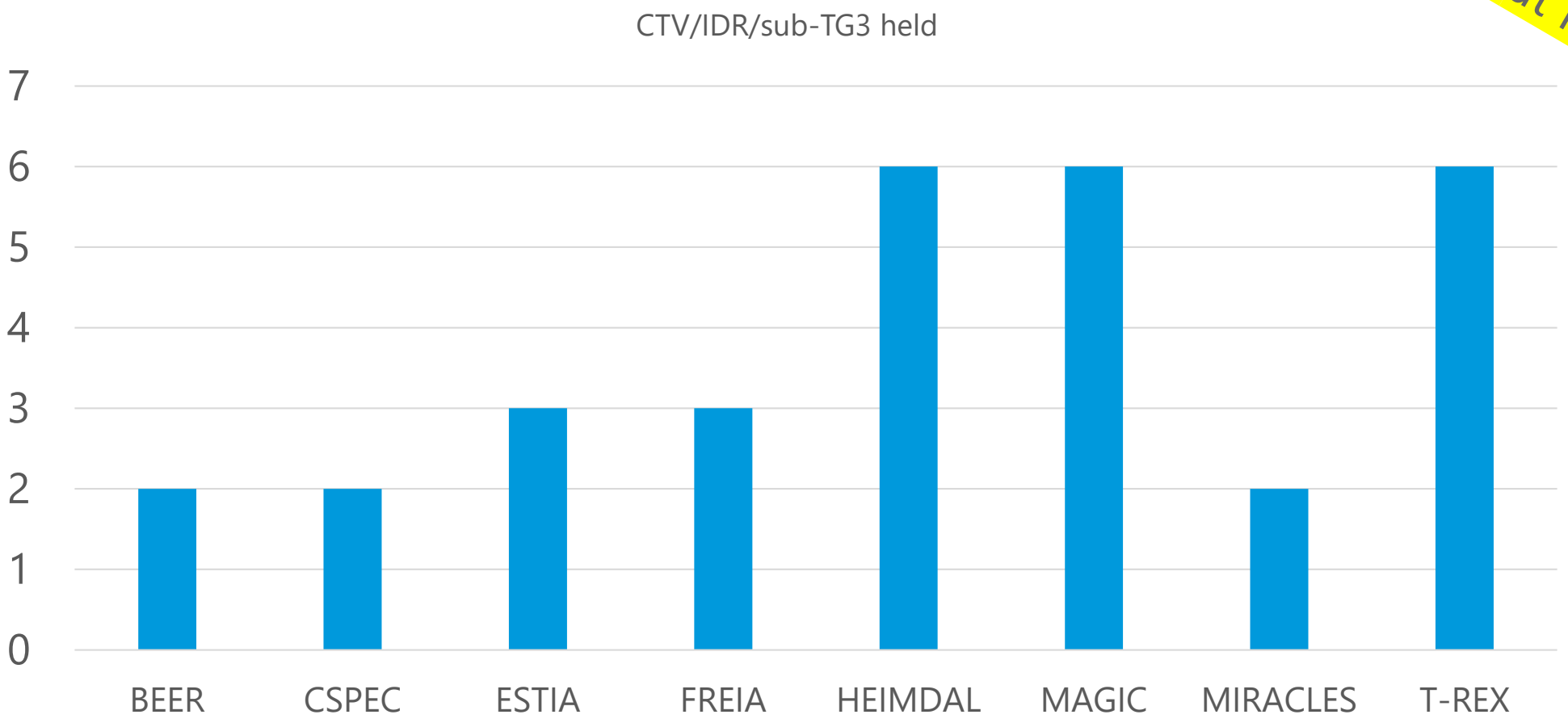
Comparing January 2025 with September 2025

Activity Name	Date (Jan 25)	Date (Sep 25)	Variance date (month)
T-REX:OoB Guide (96-151.5): CDR/subTG3 (meeting)	02-jun-25	11-dec-25	-5,8
T-REX:OoB Guide (151.5-163.1): IRR/subTG4 (meeting)	15-sep-26	03-feb-27	-4,55
T-REX: P- Fast Chopper: Factory Acceptance Test (FAT)	23-sep-25	23-nov-26	-13,4
T-REX: M- Fast Chopper: Factory Acceptance Test (FAT)	19-dec-25	06-nov-26	-9,7
T-REX: Fan Chopper:CDR/subTG3 (meeting)	14-apr-25	16-dec-25	-7,45
T-REX: BG Chopper (Disk & Housing): CDR/subTG3 (meeting)	01-apr-25	25-nov-25	-7,15
T-REX: Thermal Polarization: CDR/subTG3 (meeting)	30-apr-25	24-nov-25	-6,15
T-REX: Polarization Analyser: CDR/subTG3 (meeting)	06-May-25	19-dec-25	-6,95
T-REX: Polarization Flipper: CDR/subTG3 (meeting)	07-May-25	15-dec-25	-6,7
T-REX: Cd Shielding: Factory Acceptance Test (FAT)	01-dec-25	29-apr-26	-4,75
T-REX: Primary Coll & Slits: CDR/subTG3 (meeting)	26-jun-25	08-jan-26	-5,5
T-REX: Beamstop: CDR/subTG3 (meeting)	27-May-25	14-jan-26	-6,6
T-REX: Det boxes 2-4: Factory Acceptance Test (FAT)	31-aug-26	10-feb-27	-5,35

Completing design for T2T3 instruments

30 meetings held this year from Jan 25 to mid-Sep 25

As shown at ICB



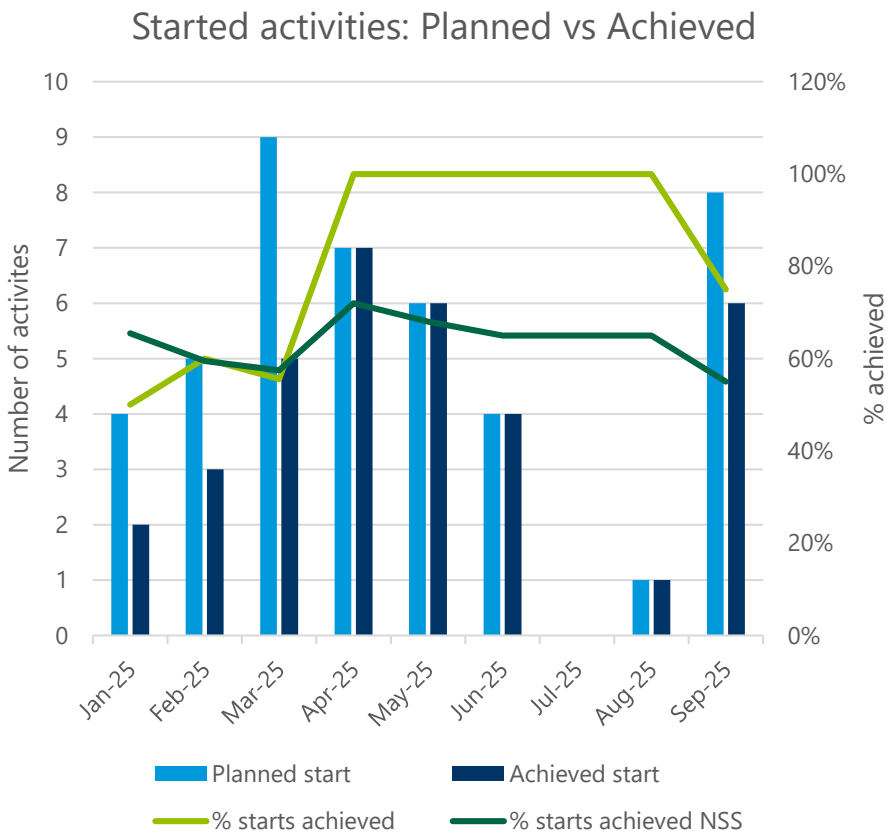
The path to TG3

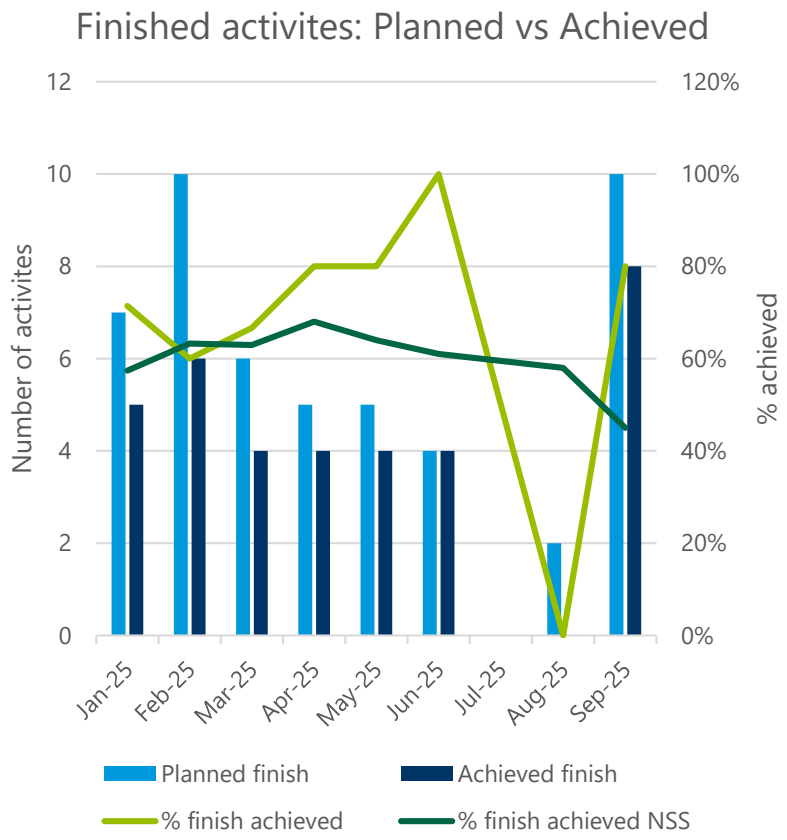
Planned CDR meetings

Activity Name	Date (Sep 25)
T-REX: Control Hutch: CDR/subTG3 (meeting)	17-okt-25
T-REX: Thermal Polarization: CDR/subTG3 (meeting)	24-nov-25
T-REX: BG Chopper (Disk & Housing): CDR/subTG3 (meeting)	25-nov-25
T-REX:OoB Guide (96-151.5): CDR/subTG3 (meeting)	11-dec-25
T-REX: Translation Table: CDR/subTG3 (meeting)	15-dec-25
T-REX: Polarization Flipper: CDR/subTG3 (meeting)	15-dec-25
T-REX: Fan Chopper:CDR/subTG3 (meeting)	16-dec-25
T-REX: Polarization Analyser: CDR/subTG3 (meeting)	19-dec-25
T-REX: Primary Coll & Slits: CDR/subTG3 (meeting)	08-jan-26
T-REX: Beamstop: CDR/subTG3 (meeting)	14-jan-26
T-REX: Sample Environment: CDR/subTG3 (meeting)	14-jan-26
T-REX:OoB Guide (151.5-163.1): CDR/subTG3 (meeting)	11-jun-26

Schedule adherence

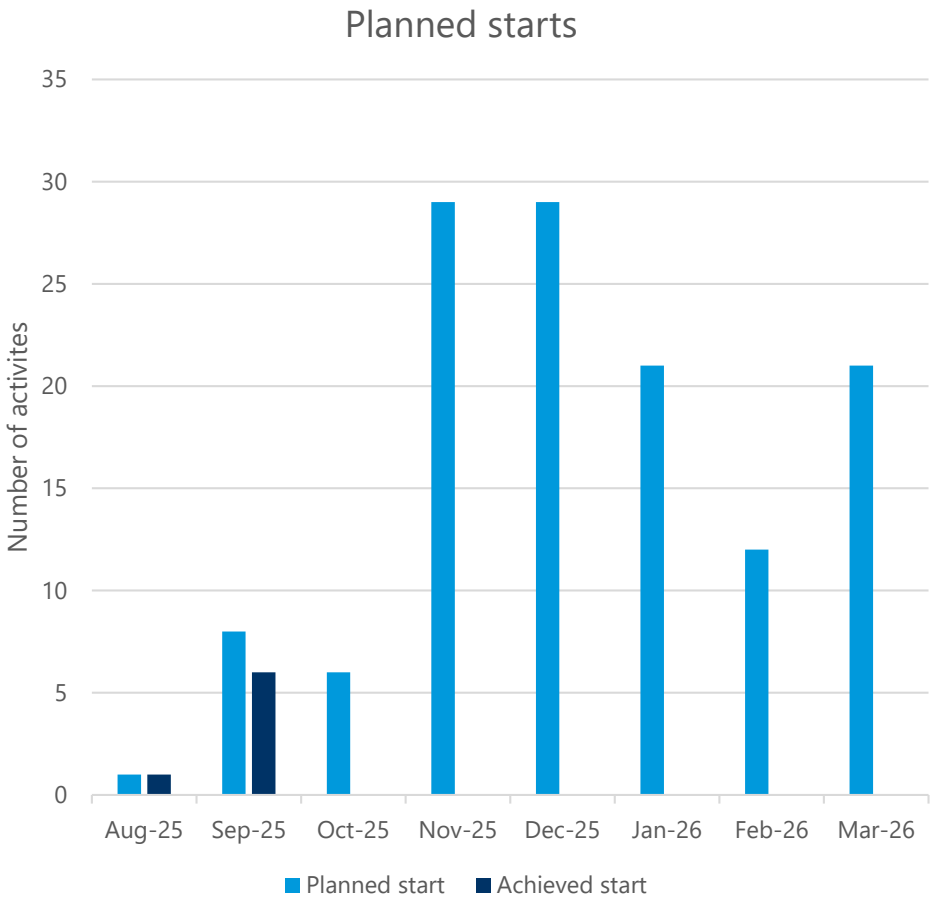
Most months – T-REX is **above average** on schedule accuracy - improvement form last period!

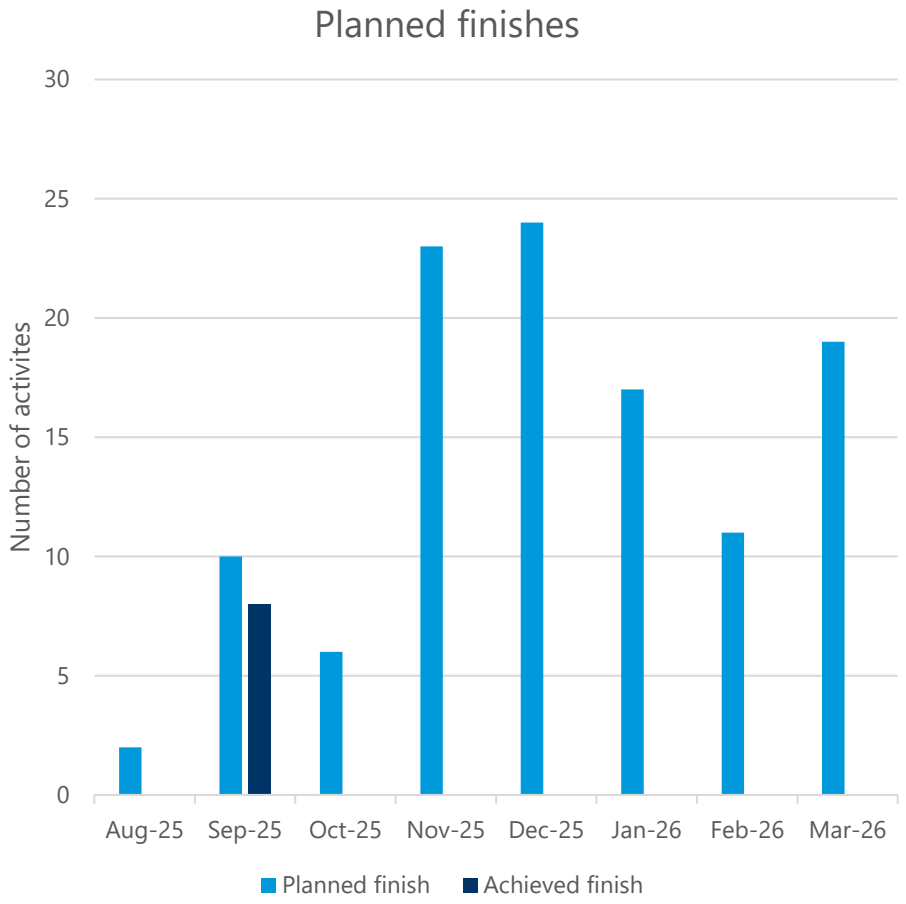




Lookout - future activities

There's a lot in the pipeline..





NSS T2T3 Replanning exercise

ICEB: SKADI, MAGIC AND T-REX

Sorry DREAM… you're not included in this slide deck…

2025-11-04

Agenda

1. Status of the replanning
2. Since the replanning finalized
3. Next steps

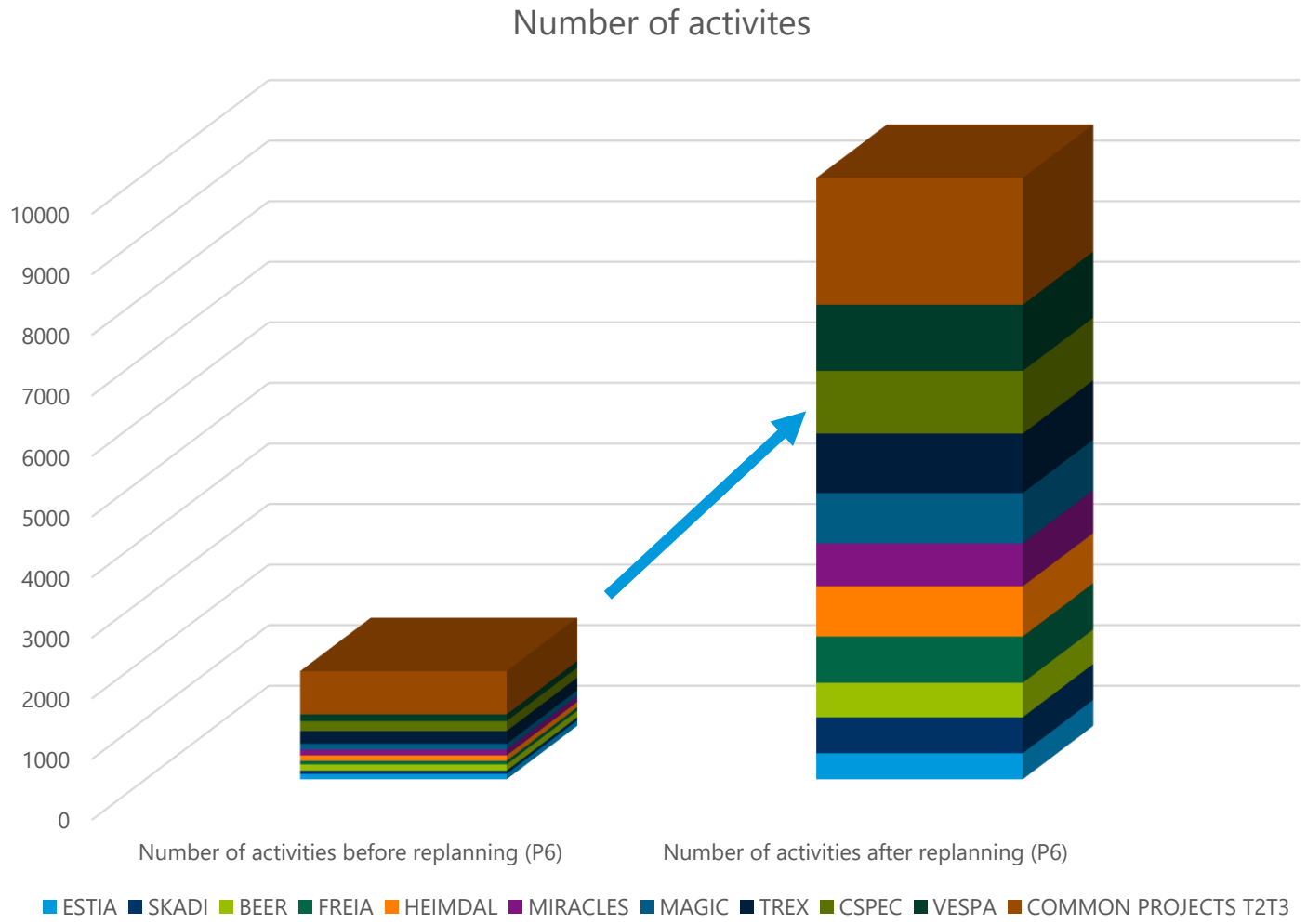
Status of the replanning

Where are we now....

2025-11-04

Replanning finalized

More details in P6 : TA milestones + detailed plan



Open activities in P6:

- **SKADI**: 180 activities:
  - 33 TA Milestones
  - 147 Detailed plan
- **MAGIC**: 553 activities:
  - 43 TA Milestones
  - 510 Detailed plan
- **T-REX**: 706 activities:
  - 133 TA Milestones
  - 572 Detailed plan

We have more information in P6.
How can we use this information:

- to plan/coordinate (installation, commissioning etc.)
- keep track of progress (updating monthly instrument dashboards with replanning dates)
- make informed decisions about priorities

Simplified view of the P6 landscape

Linking an instrument plan to common projects and technology groups

ICS – network

MCA

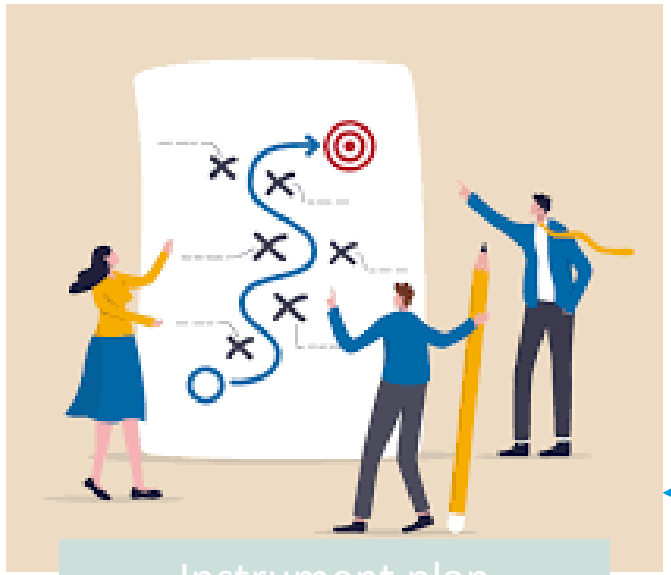
CEP

Detectors

(BM, Detector integration, Detector…)

CUP

Choppers



Instrument plan

ICS – control

ICS – PSS

Vacuum

Output:

- Installation team
- Controllers
- ….

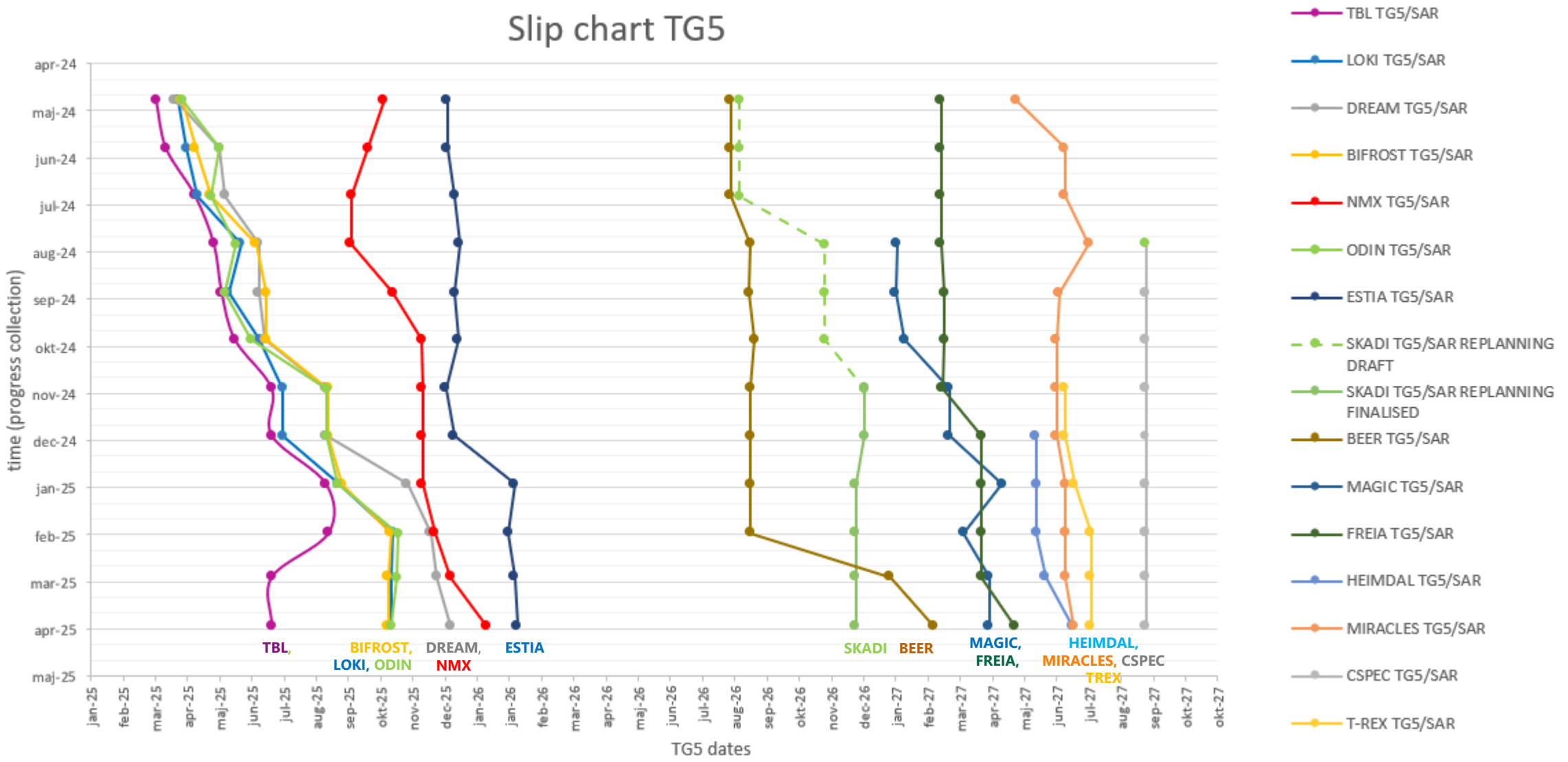
Since the replanning finalized

What’s the status of our detailed plans?

2025-11-04

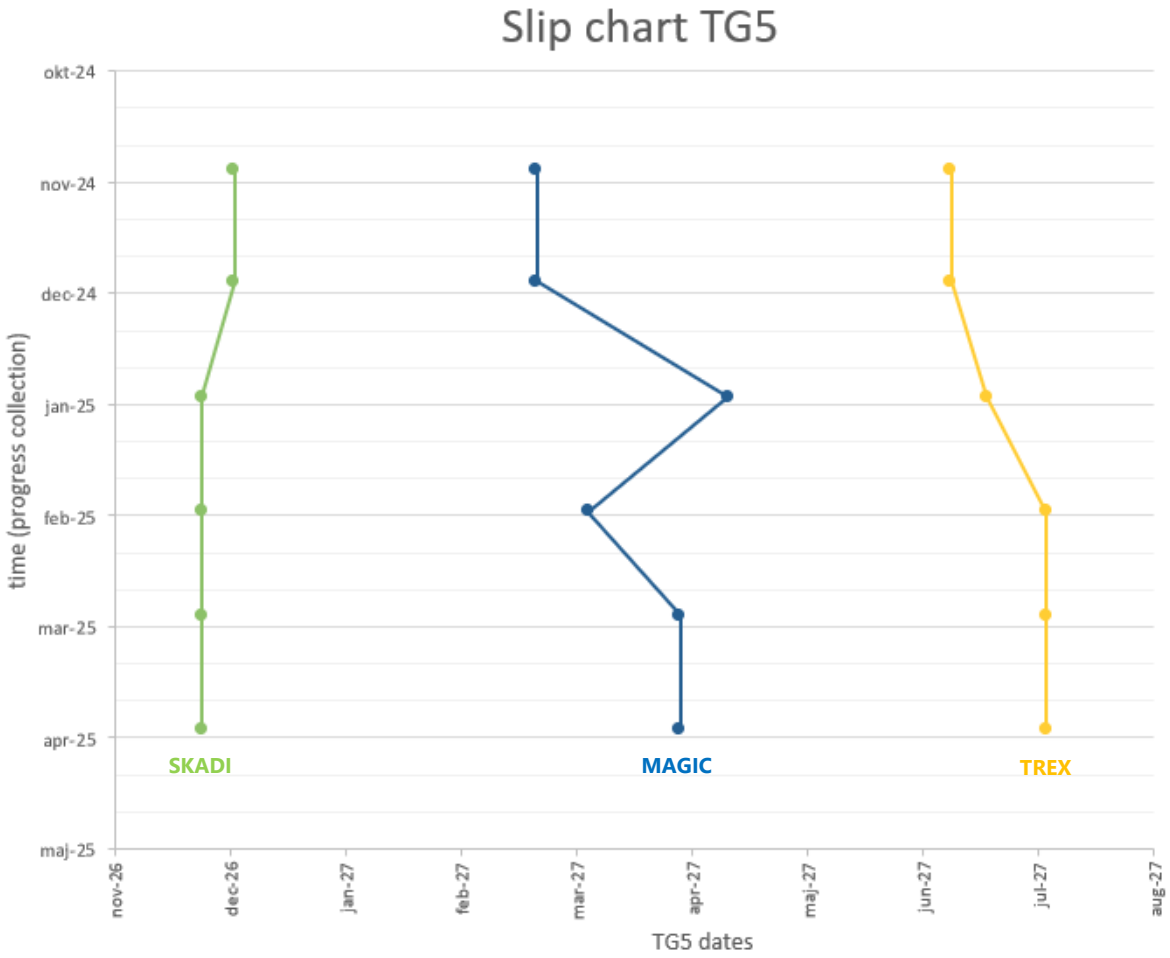
TG5 slip chart

Data from P6 April 2025 lock down



Note: For T2T3, tracking starts after replanning close-out. Vespa has TG5 in Nov 2029

Recent TG5 slips



Last four months (since December 2024)

SKADI:

- 1 week (16th of December - > 8th of December)

MAGIC – Delays on design

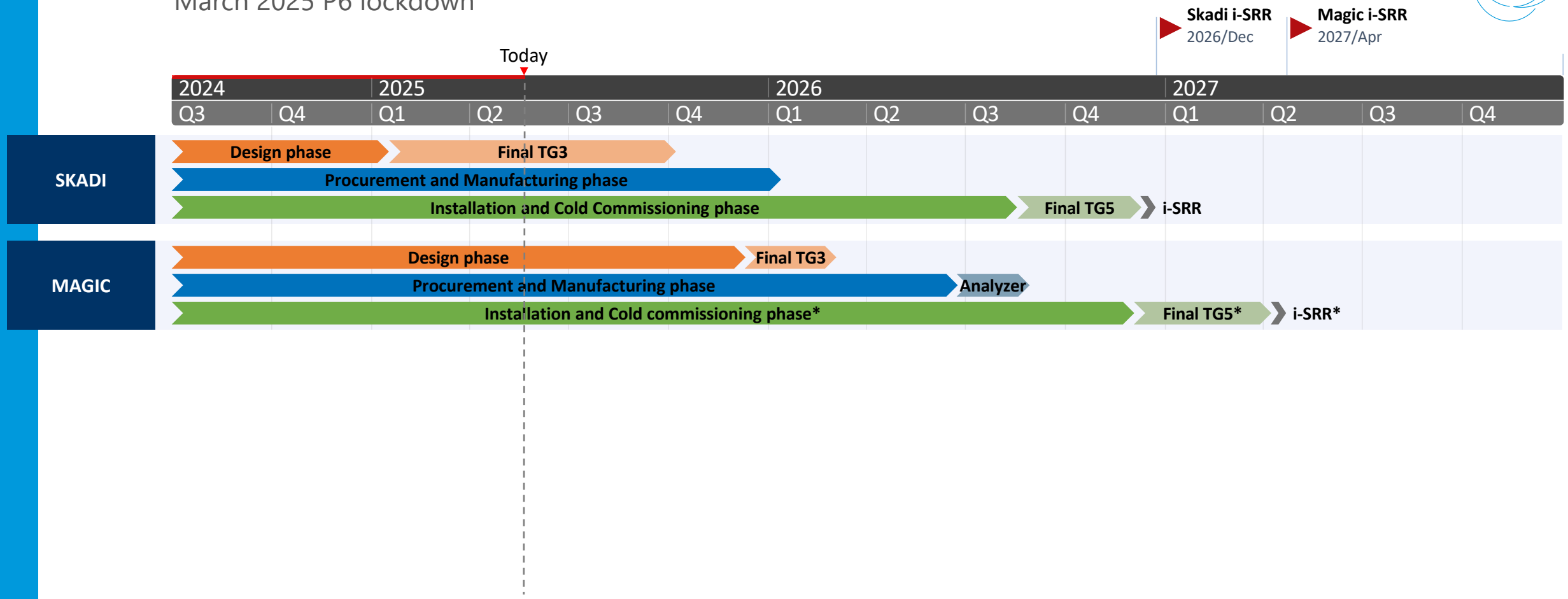
+5 weeks (2nd of March - > 7th of April)

T-REX – Delays on cave and fan chopper

+ 3 weeks (13th of June - > 8th of July)

Progress of tranche 2

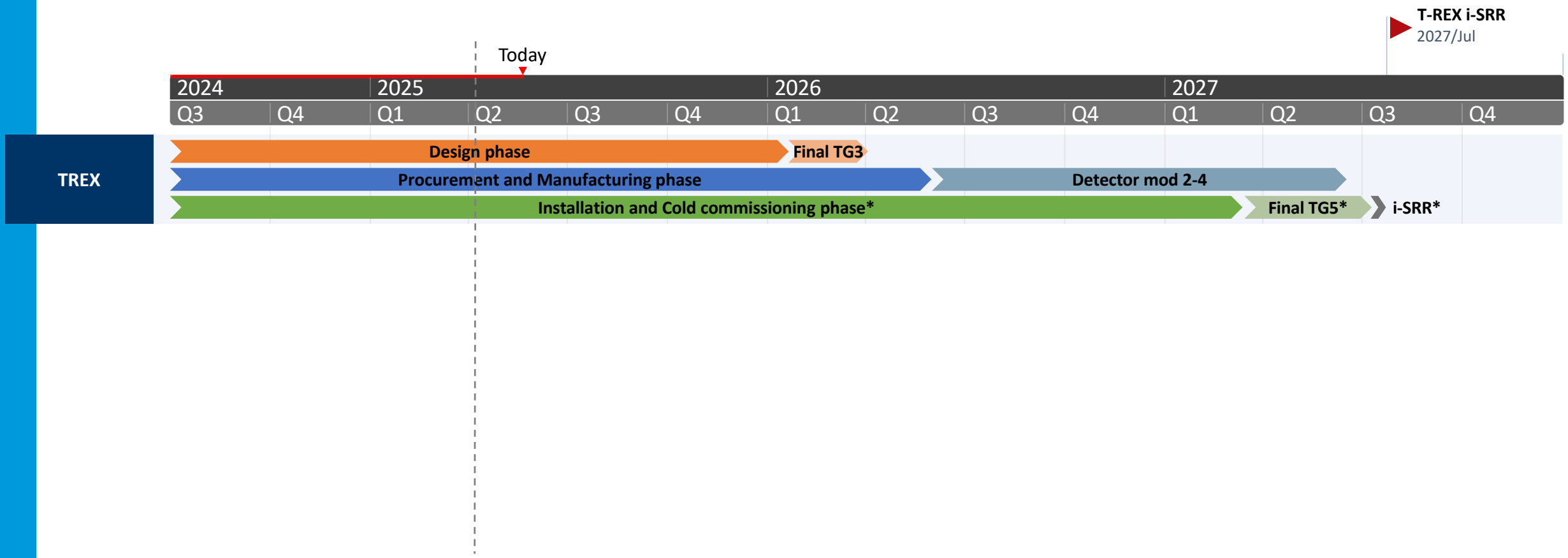
March 2025 P6 lockdown



*Non-critical components, to start cold commissioning, are delinked from TG5 but still in project scope

Progress of tranche 3

March 2025 P6 lockdown



*Non-critical components, to start cold commissioning, are delinked from TG5 but still in project scope

Time for TG5 prep and closure

To be evaluated

The T2T3 instruments have **five months** from “components installed, and local SATs completed” to “TG5 approval”. To be evaluated after tranche 1 passed their TG5.

Critical paths

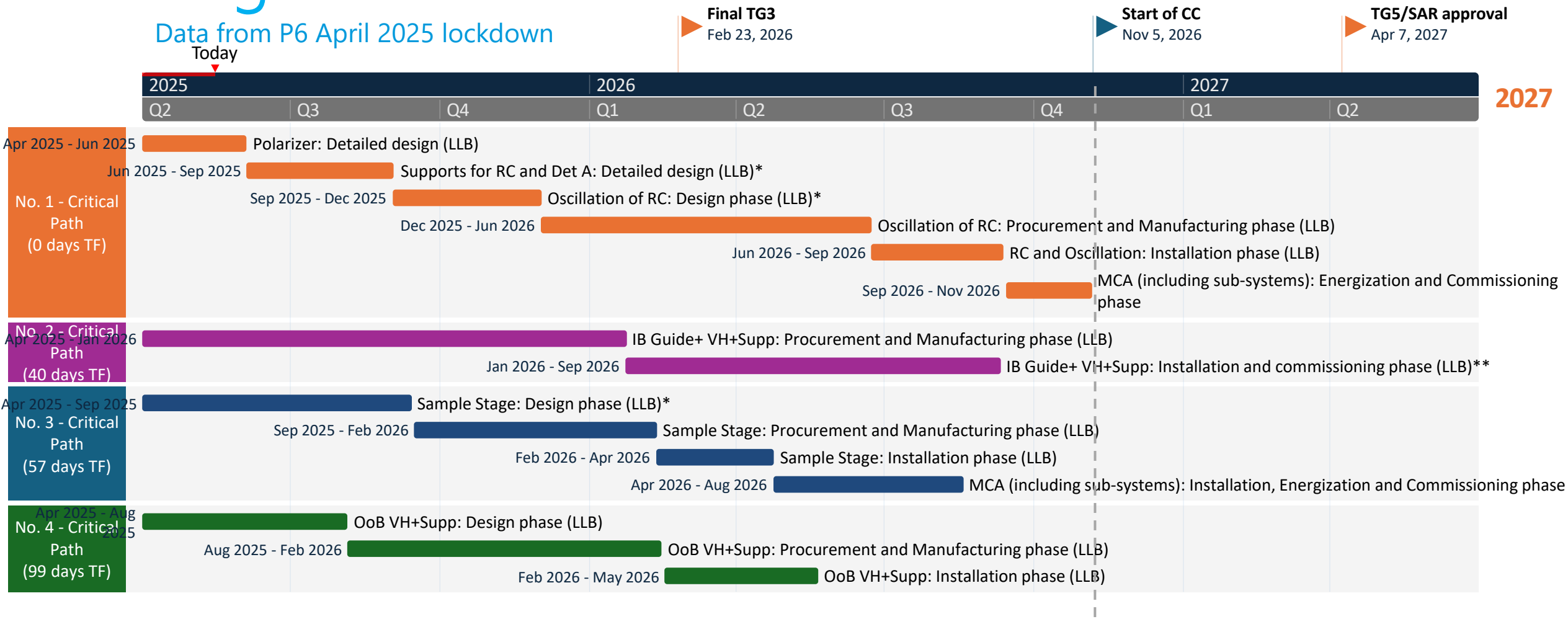
When a delay impacts the end date of a project

- We measure float towards BOT (T1) or the instrument's TG5 (T2T3)
- If the first critical path has 0 float. If there's a delay of 1 month, TG5 will shift 1 month.
- If the second critical path has 2 months float, it will push TG5 if there's a delay of more than 2 months.
- The length of an activity reflects the start and the end of an activity, not the amount of time spent during that time period.
- The critical paths reflect the activities that are critical from a schedule perspective, not necessarily critical (high risk) from a scientific or technical perspective.
- Critical paths based on P6 lock down (month indicated in the heading).

Activities on the critical paths should a priority for all of us!

Magic Critical Paths

Data from P6 April 2025 lockdown

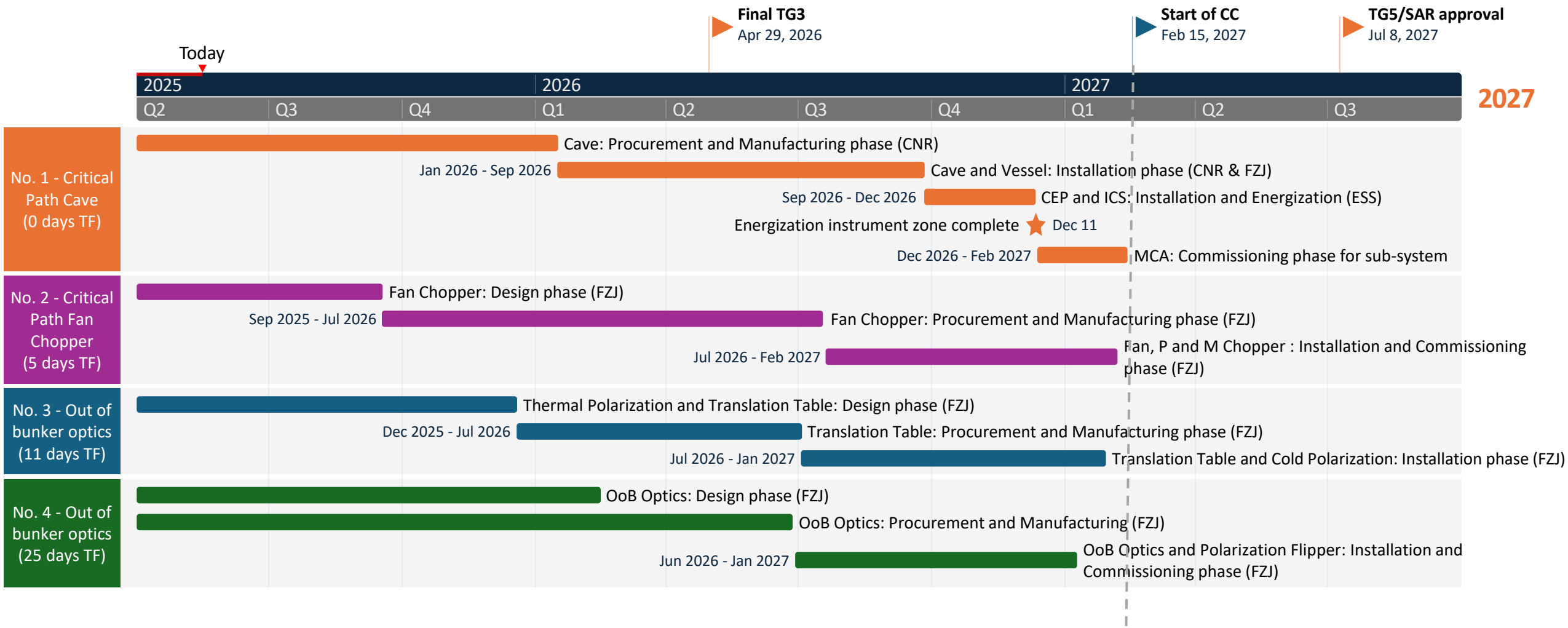


Design phase ends at CDR approval
Procurement and Manufacturing phase ends at FAT closure of open points
Installation and Commissioning phase ends at SAT approval
TF: number days of **total float** to instrument's TG5

*Constraints on design resources
**installation linked to first access after BOT.
Note: 2nd segment of Analyzer is part of the instrument scope but currently not linked to TG5 in P6

TREX Critical Paths

Data from P6 April 2025 Lockdown



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TF: number days of **total float** to Instrument's TG5

Note: MG detector boxes 2-4 (including 18 modules) is part of the instrument scope but currently not linked to TG5 in P6. MG Detector box 1 (including 6 modules) has 91 days of float

Schedule adherence

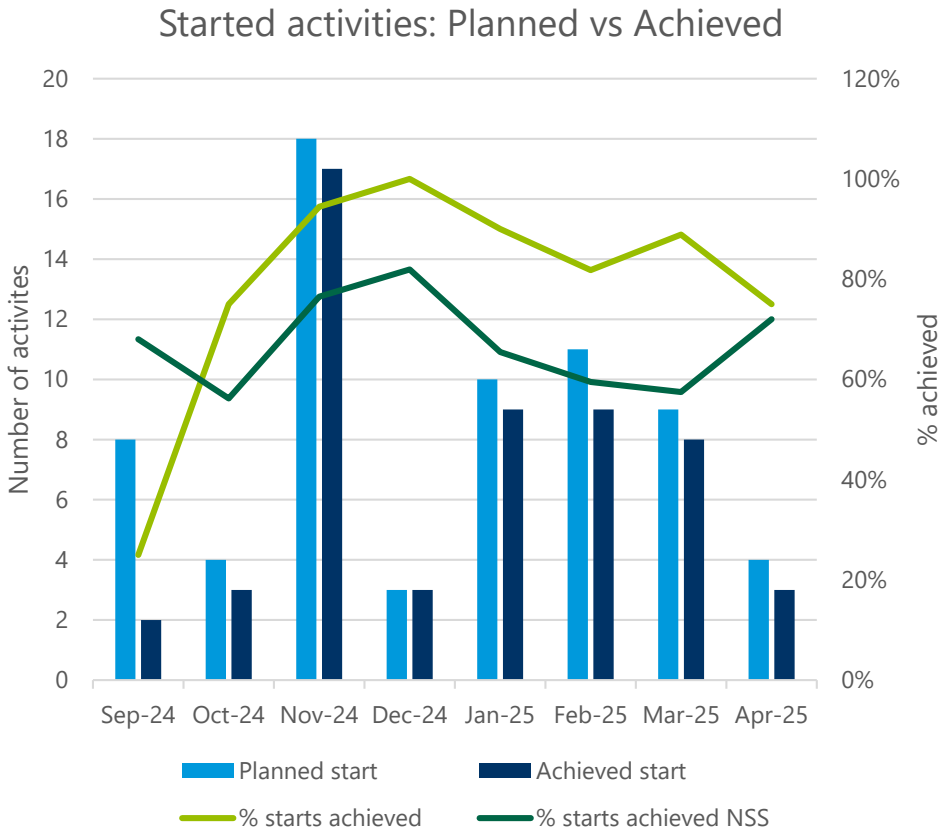
Sticking to the plan from month to month

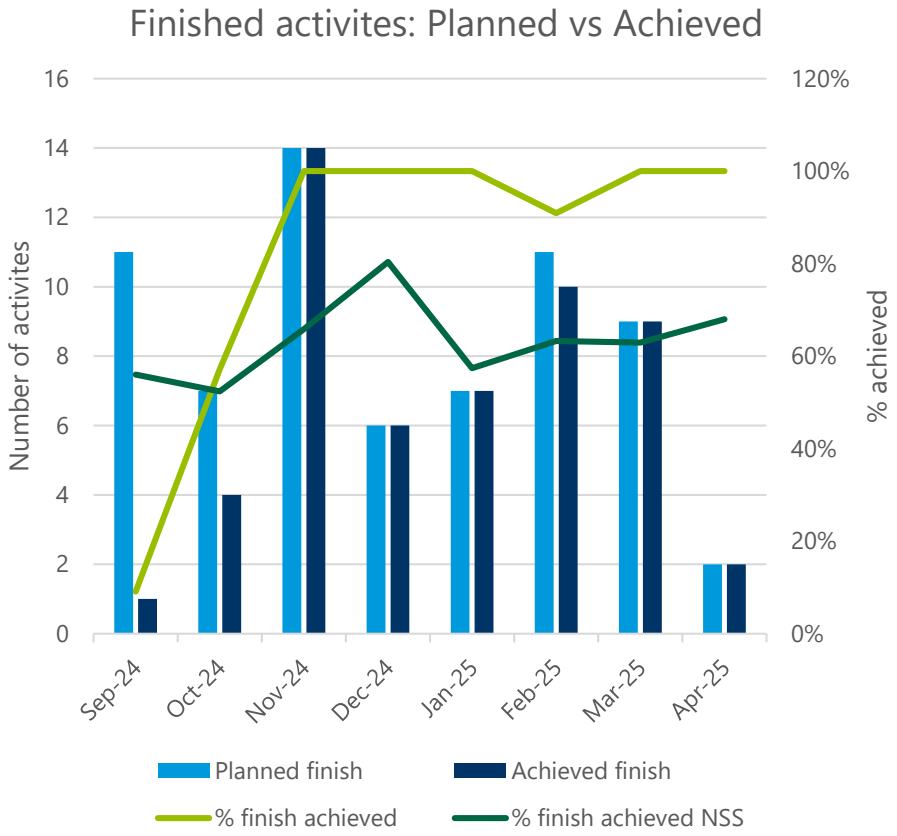
1. Monthly progress updates with Mehrdad (T2T3 planner).
2. Last minute e-mail from Sofie asking to *review the planned activities for the coming month*
3. After lockdown we evaluate how much of what was planned was achieved (starts and finishes)

It's the instrument plan not the planner's plan, which is – of course - dependent on other groups' plans in P6

Schedule adherence

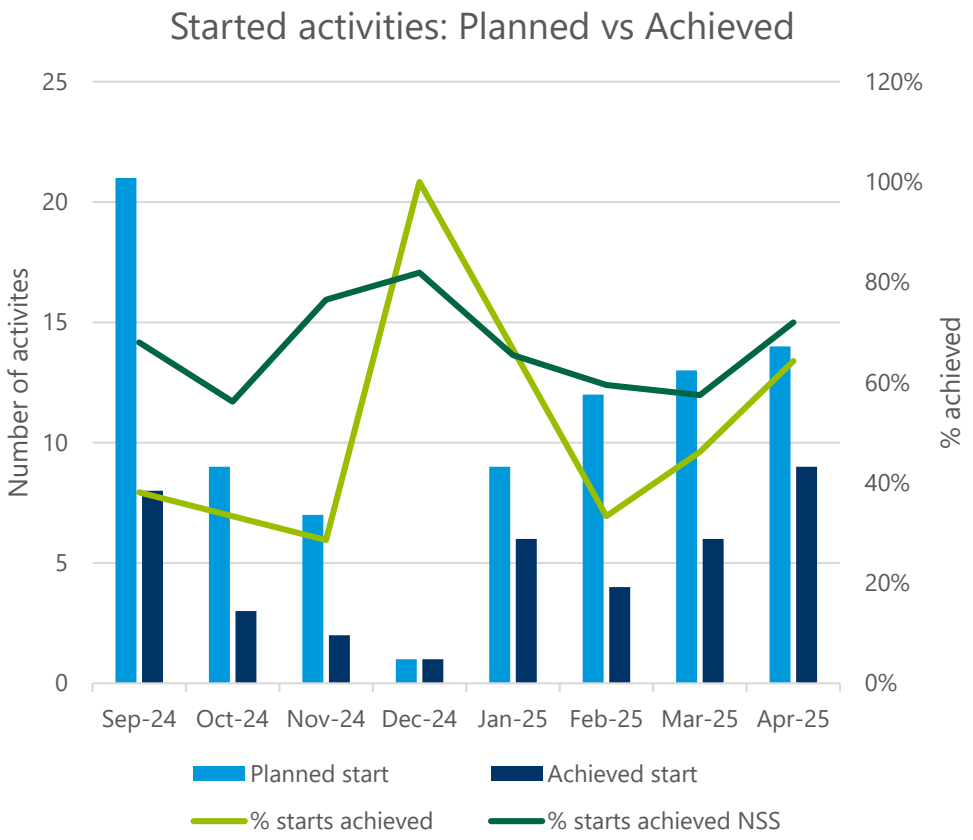
Most months – SKADI is **above** average on schedule accuracy

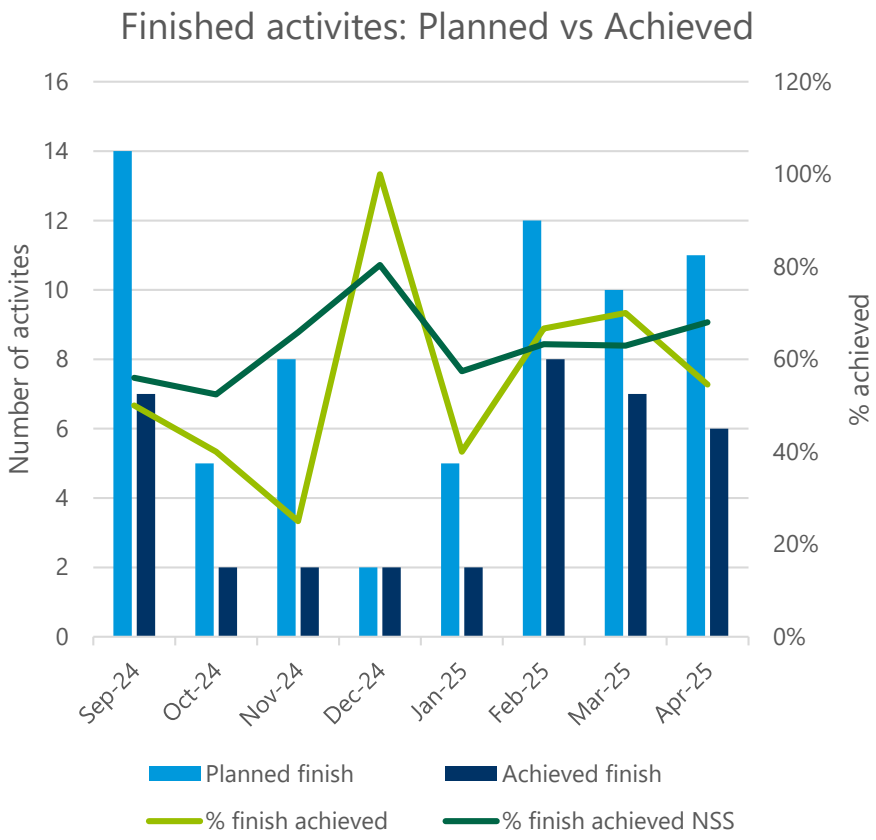




Schedule adherence

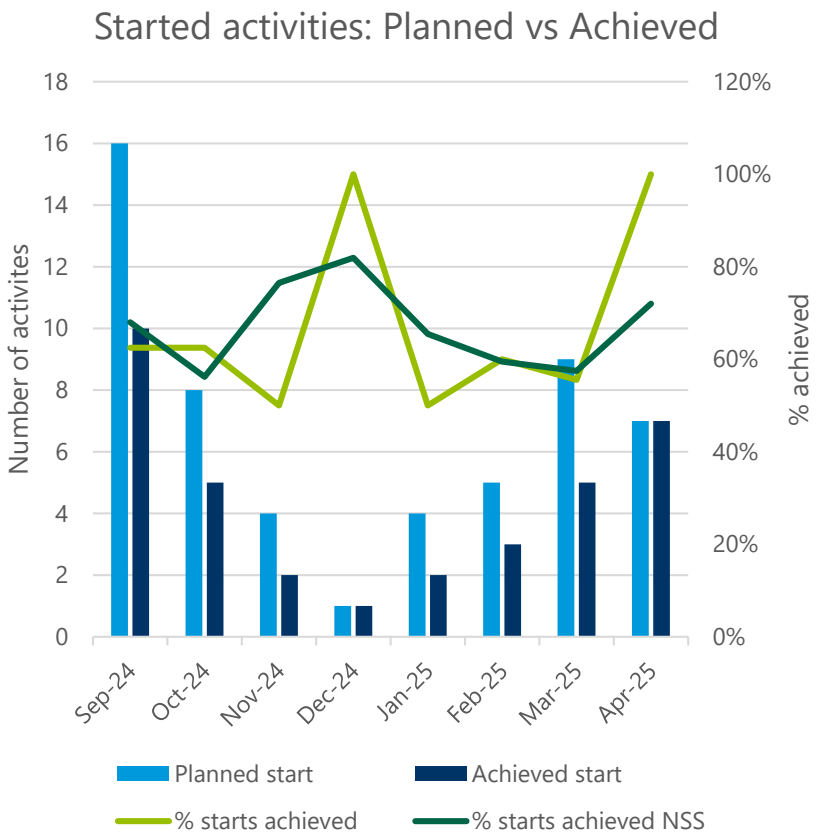
Most months – MAGIC is **below** average on schedule accuracy

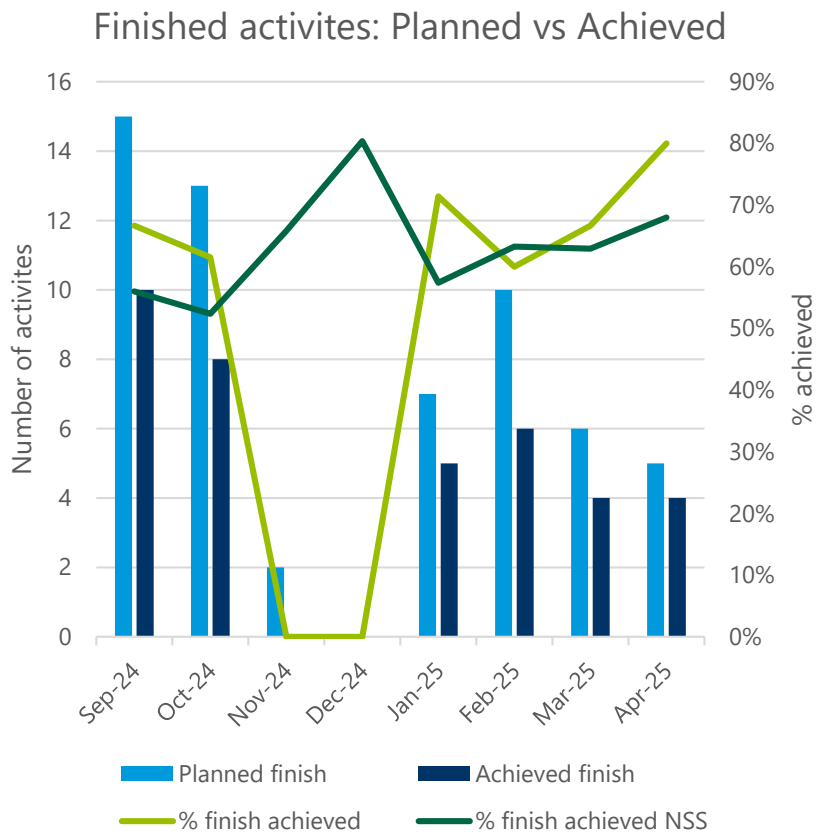




Schedule adherence

Most months – T-REX is **average** on schedule accuracy





Earned value

TA milestones with budget

Comparing scheduled (in the replanning) vs. performed (lockdown), cumulative to date

- Schedule Variance
- Schedule Performance Index (SPI)

An example… if by April 2025:

- Scheduled to have been earned / completed (as per replanning): 5 553 kSEK
- Performed: 1 424 kSEK

->Schedule variance -4 129 kSEK

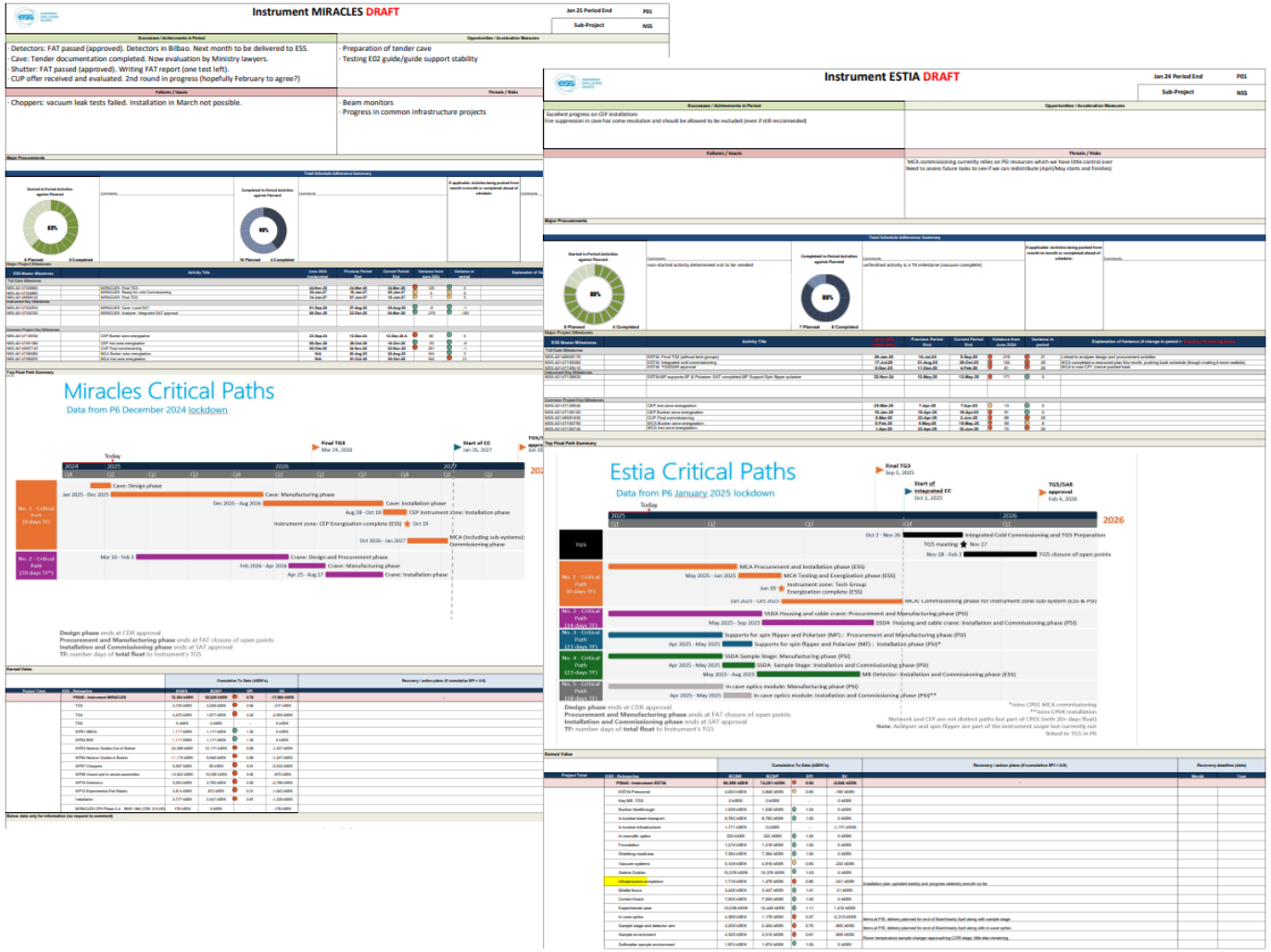
->SPI 0.26 (performed/scheduled=1424/5553)

Some of the next steps

2025-11-04

Updated dashboard

Comparing with dates from the replanning



Measuring against replanning dates. The detailed schedules gives more data to monitor progress and evaluate status.

- Critical paths
- Key milestone
- Earned value analysis
- Schedule adherence

Change request to be implemented in P6

Ways we're supporting

As discussed in ICB:s

- Design support to instrument teams
  - Support to Magic and T-REX ongoing
- Technical writers support to instrument teams
  - Support to Skadi ongoing (TG3 documentation)
- Instrument Infrastructure Coordinator
- Framework agreement for false floor signed with MSHIELD
- Common projects offer, based on service level (vs. as before - detail design)
  - More efficient
  - Increased cost risk for ESS
- Rigging is now charged on NSS OCC
- NSS is continuously working on finding other ways to mitigate and/or accelerate

Working together towards a common goal

Partners have been asked for proposal for additional acceleration measures, to be funded by partners and/or contingency funds.

Let’s keep an open dialogue and find mitigations jointly

Thank you! Questions?

2025-11-04

CR - replanning

Ongoing

The replanning was done for all Tranche 2 and Trance 3 (T2T3) instruments and started in December 2023 and was concluded in January 2025

The Change Request (CR) with the updated schedule will be implemented in P6 (PMB), dates to which WP manager and instrument teams will be hold accountable.

All T2T3 Instrument (ESTIA, BEER, FREIA, MIRACLES, MAGIC, CSPEC, SKADI, T-REX and HEIMDAL) excluding VESPA.