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Sincrotrone
Trieste

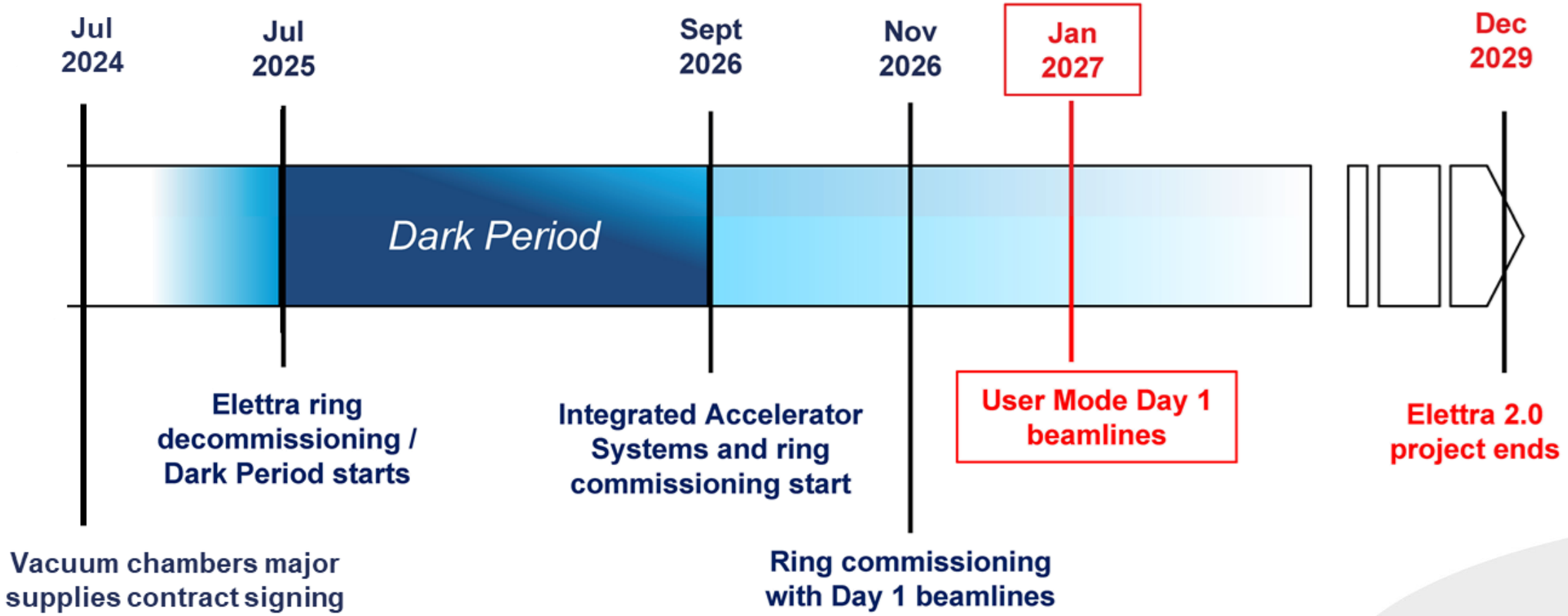
WHEN EVERYTHING IS LATE:
Practical Supplier Management in the Elettra 2.0 Project

Giulio Scrimali
Elettra Sincrotrone Trieste

Intro – Elettra 2.0 – Project Context

Elettra 2.0 Upgrade Program:
Upgrade the 260 m SR to 4th gen. standards (2.4 GeV // 400 mA // 212 pm rad)

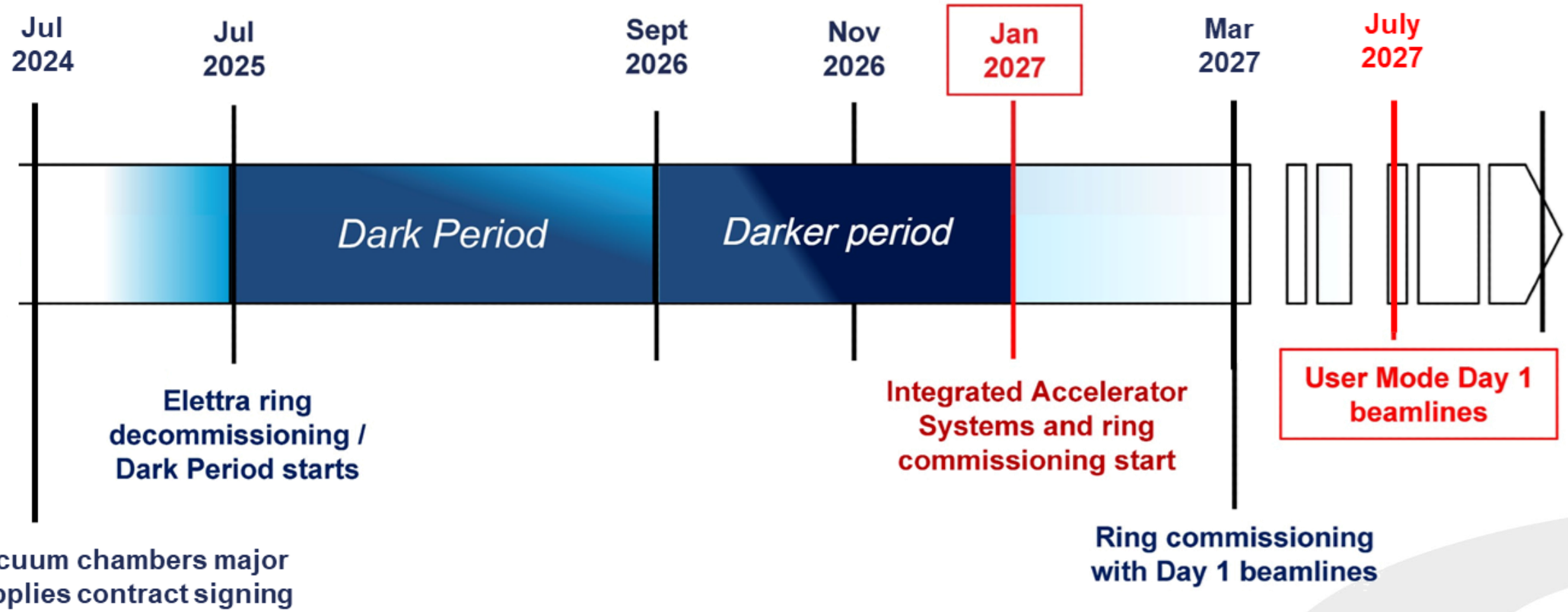
Project Timeline: Q4-2025



Intro – Elettra 2.0 – Project Context

Elettra 2.0 Upgrade Program:
Upgrade the 260 m SR to 4th gen. standards (2.4 GeV // 400 mA // 212 pm rad)

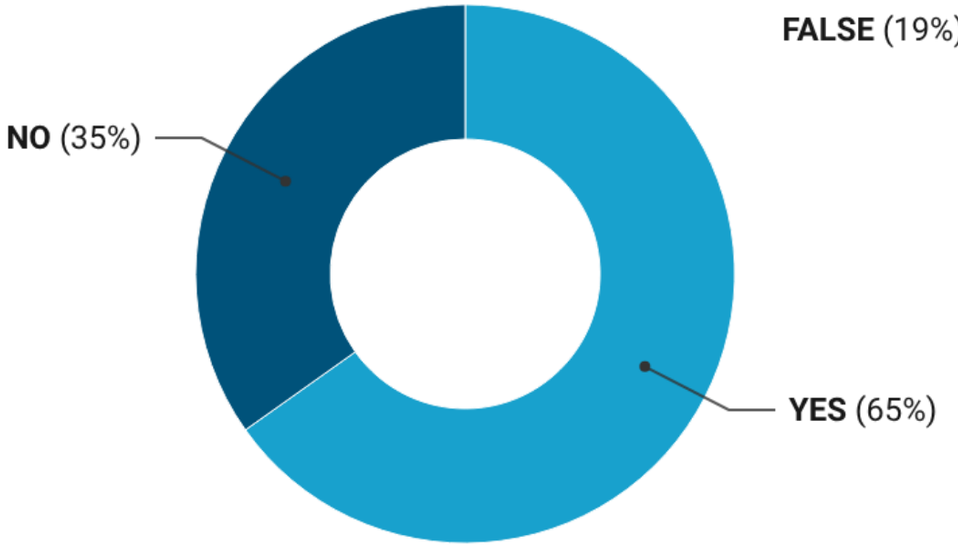
Project Timeline: Q1-2026



Supply Status: from 2022 to today

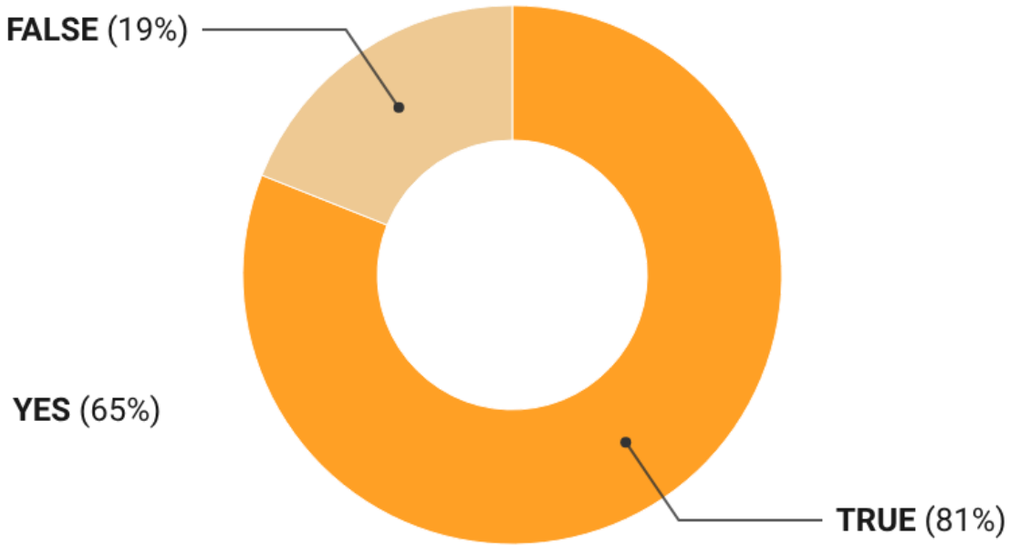
Orders in Delay

Total: 104 Delayed: 68



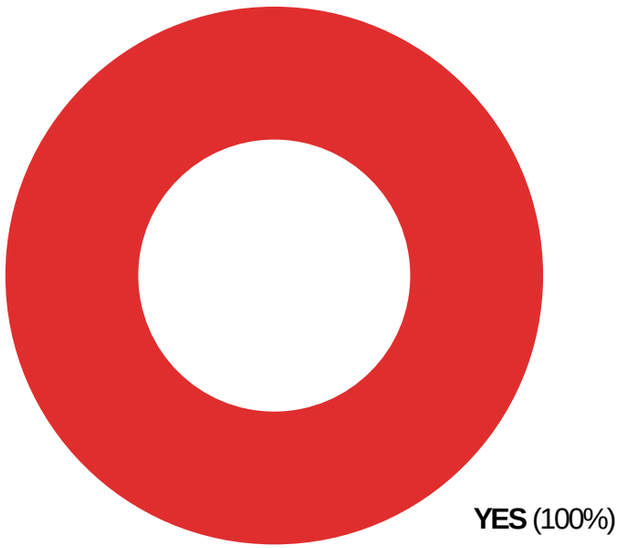
Orders in Delay

In severe delay (>20%): 54/68



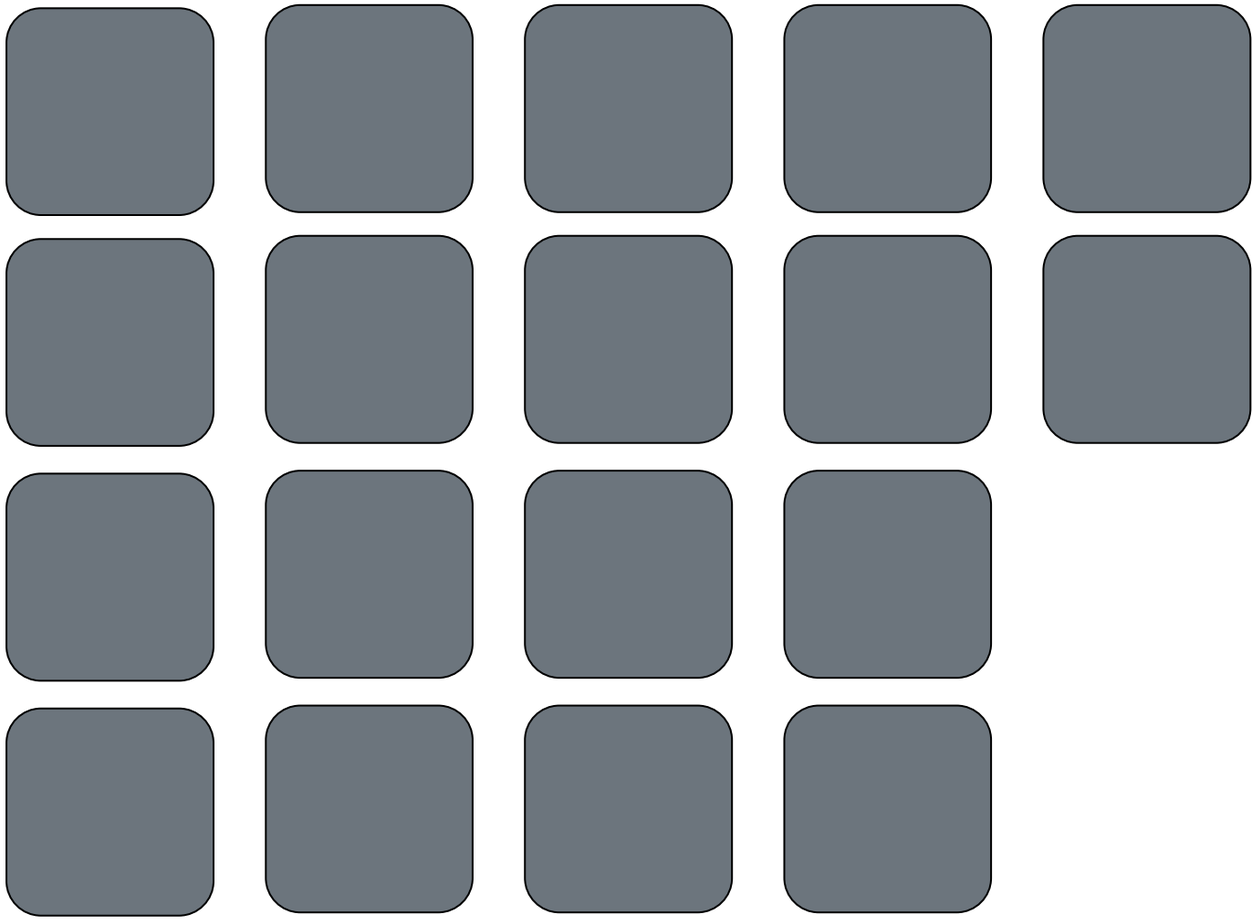
Orders in Delay

Vacuum related: 18/104 (V.C., bellows, …)

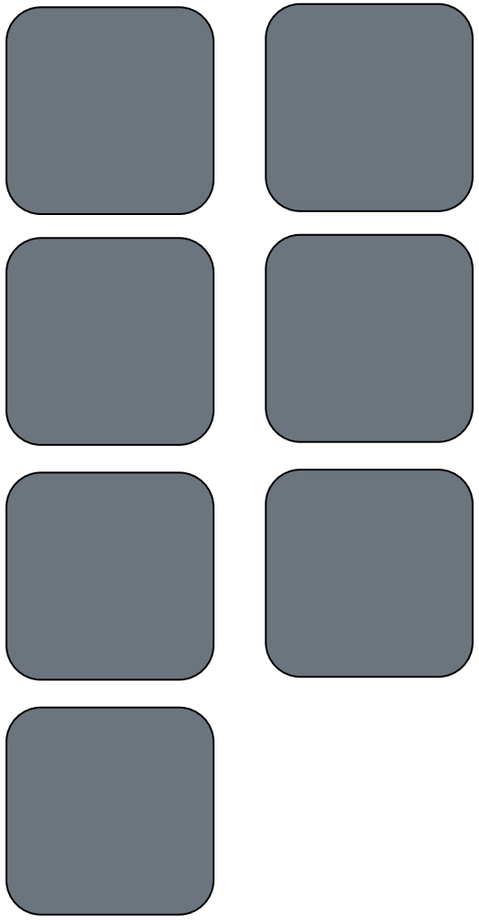


All Severe.

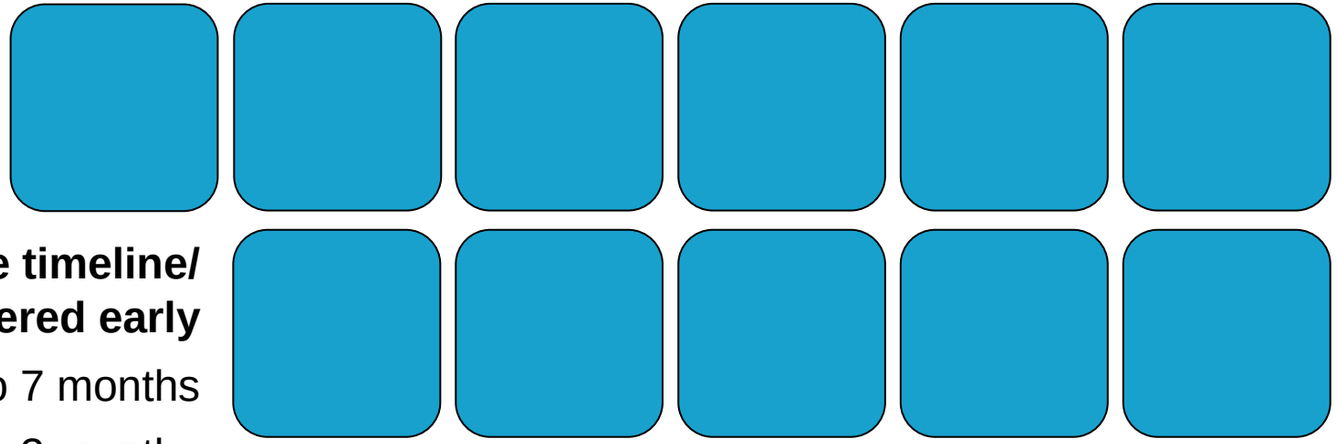
Vacuum Orders: Not All Delays Are Equal



Not All Delays Are Equal



NON-CRITICAL

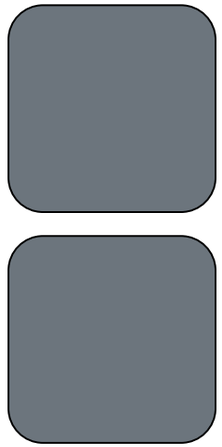


Enough buffer in the timeline/ ordered early

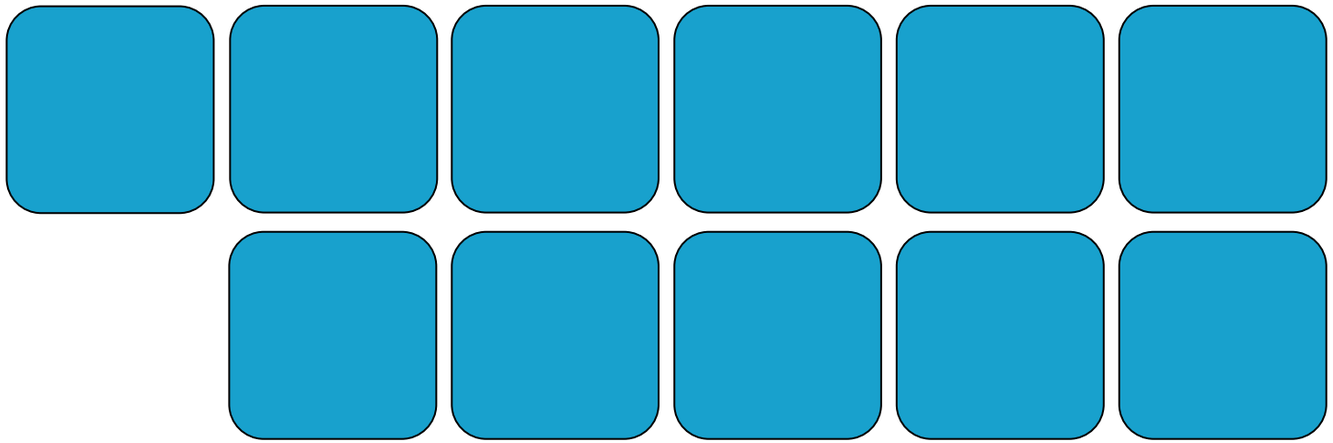
Delays range: 1 to 7 months

Average delay: 3 months

Not All Delays Are Equal



NON-CRITICAL



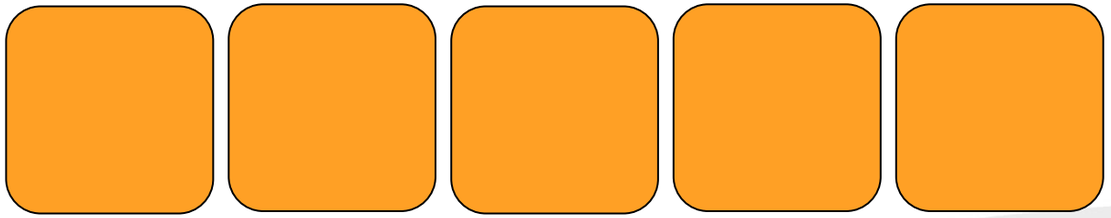
Buffer not sufficient in the original timeline

Delay range: 3 to 9 months

Delays average: 5 months

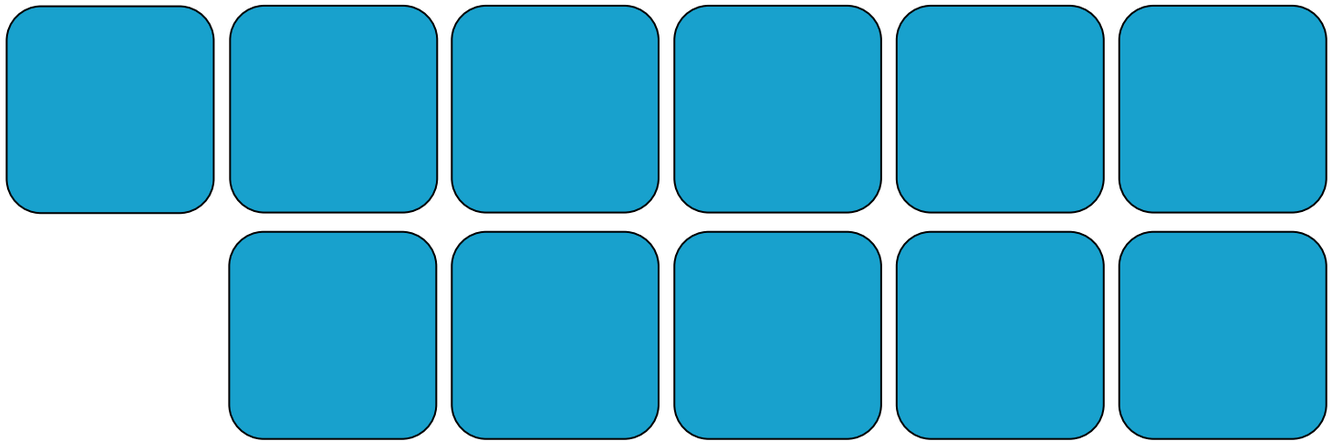
Would drive the overall project delay, if not for…

NEAR-CRITICAL



Not All Delays Are Equal

NON-CRITICAL

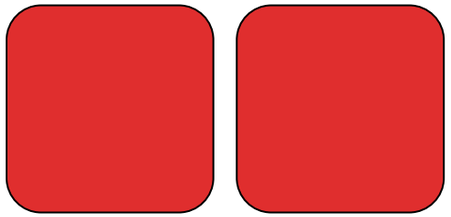


Critical Path Supplies

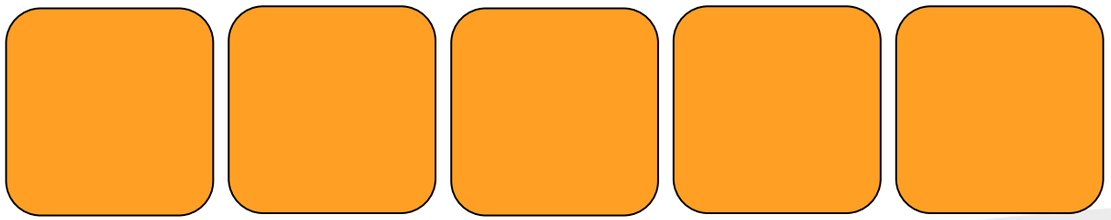
They drive the overall project schedule

Delays >1y

CRITICAL PATH

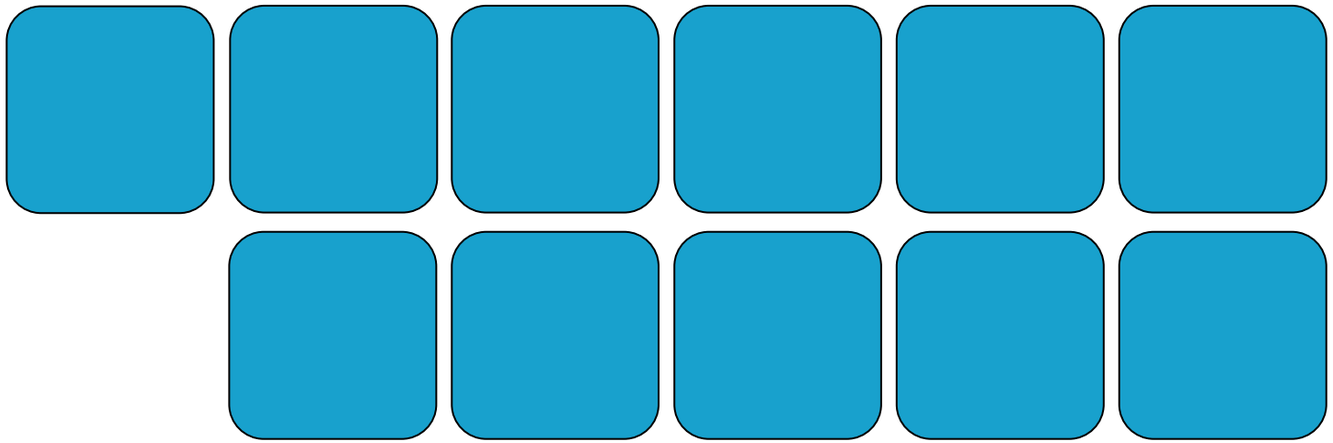


NEAR-CRITICAL

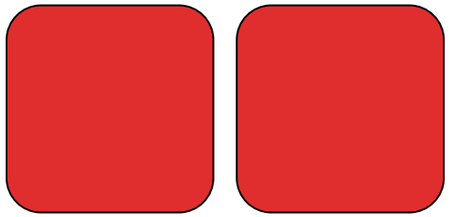


Not All Delays Are Equal

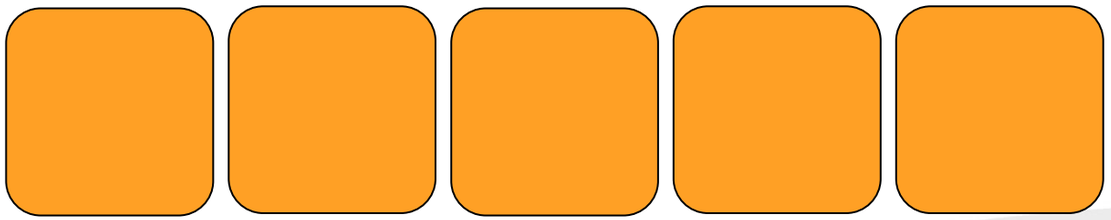
NON-CRITICAL



CRITICAL PATH



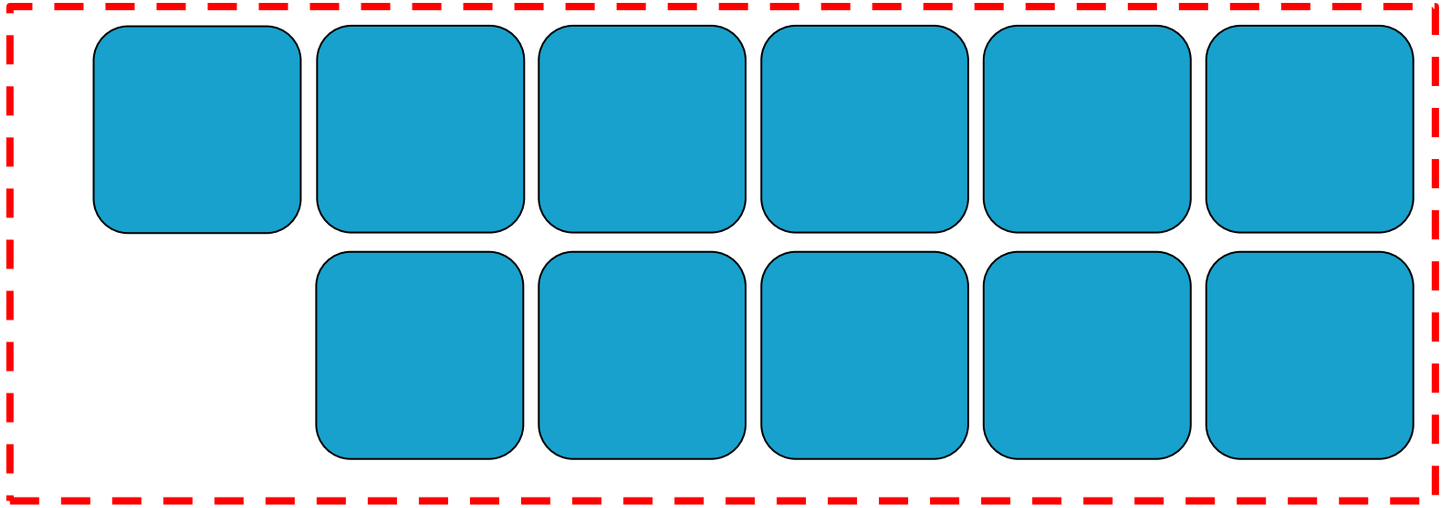
NEAR-CRITICAL



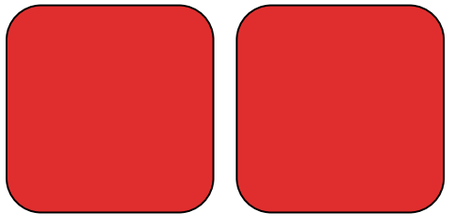
Non-critical Supplies: Low-touch monitoring

Actions:

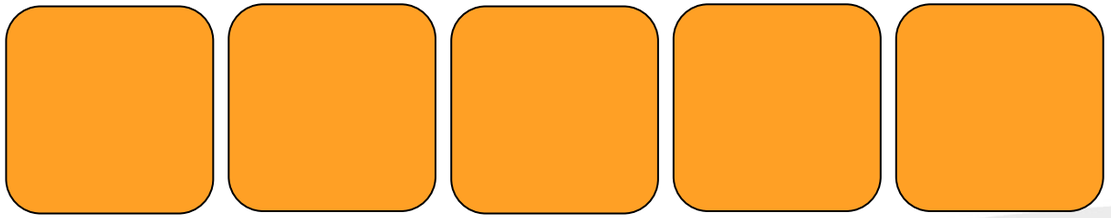
- Keep an eye on – monthly basis
- Low intensity monitoring.
- No active intervention required.



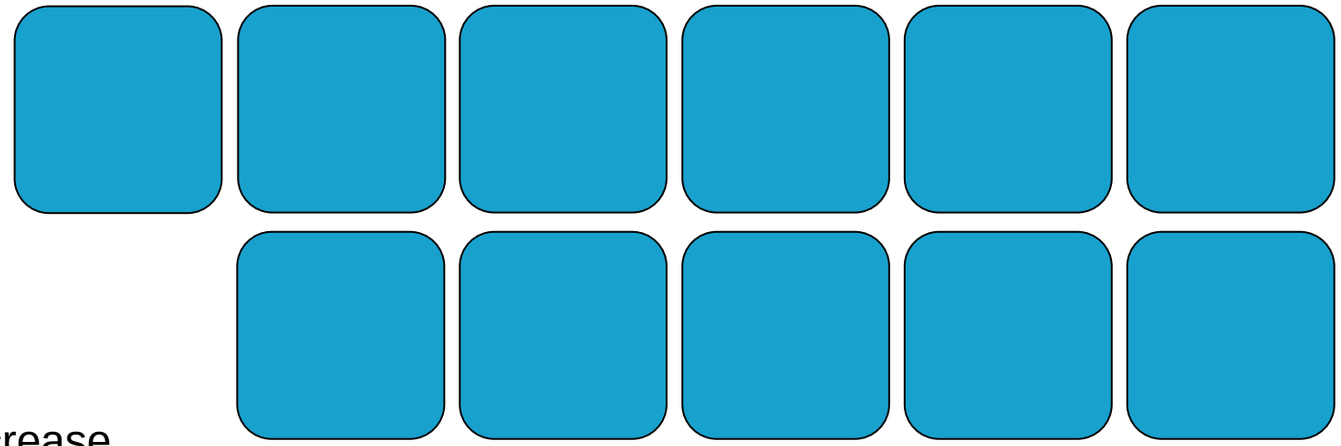
CRITICAL PATH



NEAR-CRITICAL

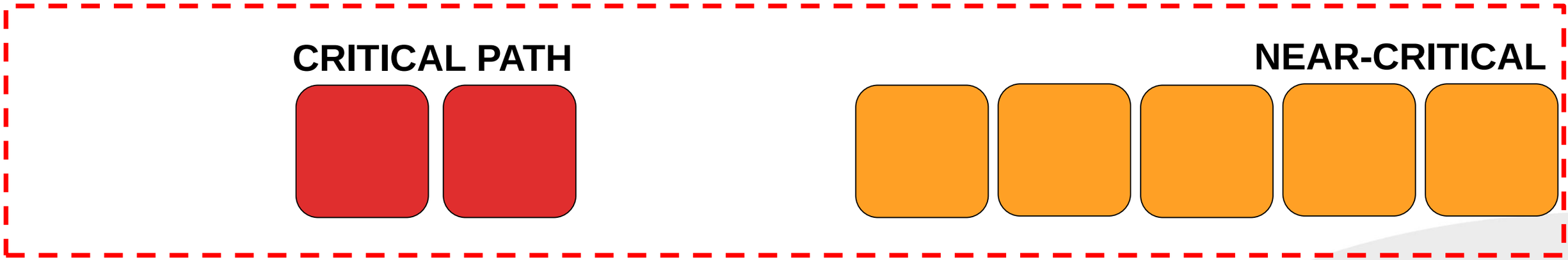


Critical Supplies: Active Mitigation



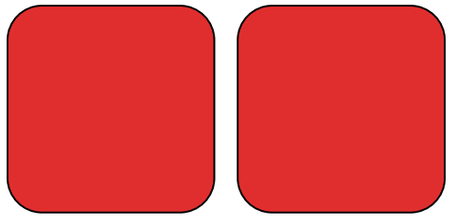
Actions:

- Strong monitoring focus.
- Active mitigation of the delay impacts.
- Continuous action to reduce delay/prevent further increase.

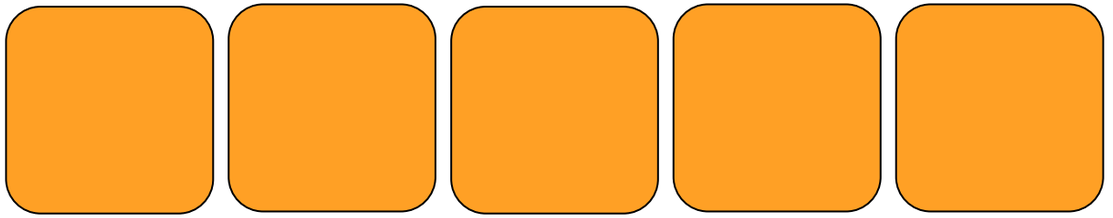


From Classification to Action

CRITICAL PATH



NEAR-CRITICAL



Actions:

- Strong monitoring focus. → SUPPLIER GOVERNANCE
- Active mitigation of the delay impacts. → RESILIENT CONTINUITY
- Continuous action to reduce delay/prevent further increase. → PROACTIVE ENGAGEMENT

Supplier Governance: Direct Engagement

SUPPLIER GOVERNANCE

Frequent visits

- Helps reminding the objective and maintaining the pressure.
- Allows to gage without filters the real supply state.

Minimum: monthly. Aim for bi-weekly on focus periods.

Direct Involvement with all Parties

- Obtain a direct channel with critical subcontractors
- Some prime contractors don’t know how to manage subcontractors.

Suppliers micro-management is sometimes the way to go forward.

Supplier Governance: Structured Monitoring

SUPPLIER GOVERNANCE

Periodic Meetings and Production Reports

- Weekly meetings to track the supply status.
- *Weekly Production Report* to be sent beforehand for line-by-line discussion.
  - Prior week commitments.
  - Active schedule deviations tracking and mitigation.
  - Production Outlook for following weeks.

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Production Report Template

Contract	Contratto n. 556/2024 per la fornitura di n. 82 (ottantadue) camere da vuoto curve in acciaio inossidabile per i magneti dipolari dell'anello di accumulazione per il progetto Elettra 2.0 **CIG N. B0D4DEA7D6** **CUP D94D17000150001** **CUI F00697920320202200072**
Supplier	Three letters company – recently part of a larger group
Date	**27/04/2026 – CW18**
Version	**1.0**

Past Week Commitments

[Listed items are only examples]

	Activity	Completed?
1	(300-06) & (300-14) – TC coating	Yes
2	(305-04) & (305-05) – PM coating	Yes
3	(305-04) & (305-05) – TC assembly	Yes
4	(301-07) & (301-08) – PM assembly	Yes

Active Deviation From Plan and Mitigation Actions

[Listed items are only examples]

Deviation	Items affected	Mitigation Action	Effect on the schedule

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Production Outlook

CW18

Activity	Comments
(301-07) & (301-08) – PM coating	
(305-04) & (305-05) – TC coating	
(301-07) & (301-08) – TC assembly	
(301-05) & (300-12) – PM assembly	

CW19

Activity	Comments
(301-05) & (300-12) – PM coating	
(301-07) & (301-08) – TC coating	
(301-05) & (300-12) – TC assembly	

CW20

Activity	Comments
(301-05) & (300-12) – TC coating	
(305-01) & () – PM assembly	

Suppliers Governance: Escalation Discipline

SUPPLIER GOVERNANCE

Proper and Timely Management Escalation

Escalate when issues **exceed team authority, threaten project objectives, or remain unresolved**.

- Act **early** with a clear description, impact assessment, and actions taken.
- Provide **decision-ready options** with trade-offs to enable timely management action.

To some PMs, this may appear as "*failing to manage*": it would be so only if the escalation is **not** enacted.

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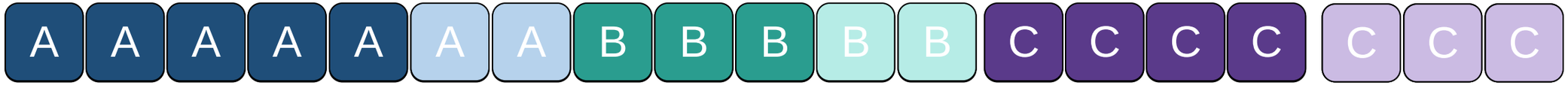
Resilient Continuity:

RESILIENT
CONTINUITY

Resilient Continuity: Project vs Production Needs

RESILIENT CONTINUITY

- Suppliers Preferred Production Schedule: **sequential**



Supply focus end

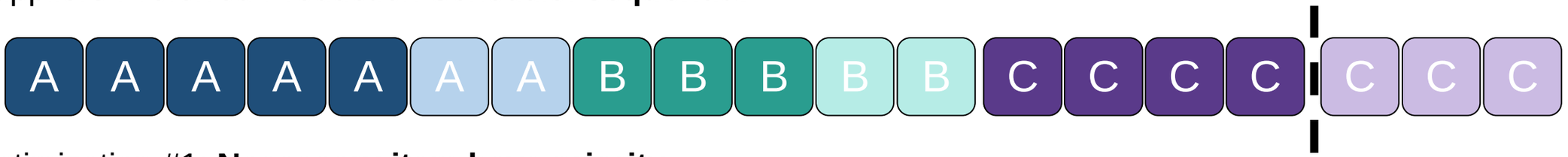
A Necessary Item

A Spare item

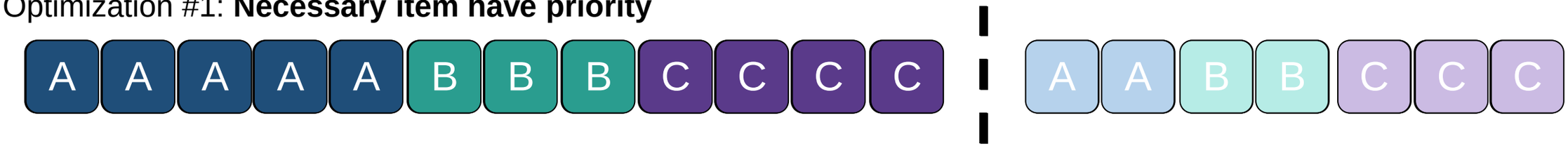
Resilient Continuity: Prioritizing what matters

RESILIENT CONTINUITY

- Suppliers Preferred Production Schedule: **sequential**



- Optimization #1: **Necessary item have priority**



Supply focus end

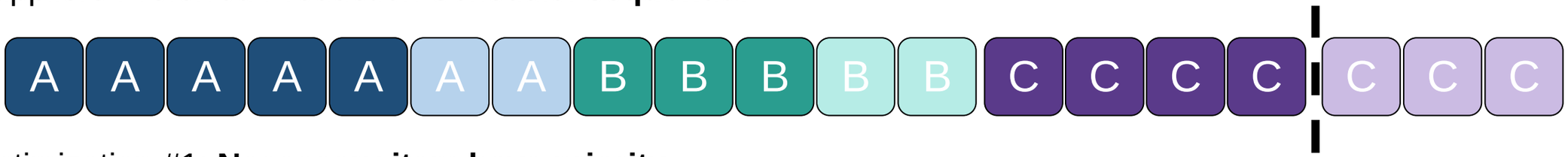
A Necessary Item

A Spare item

Resilient Continuity: Aligning Production with Installation

RESILIENT CONTINUITY

- Suppliers Preferred Production Schedule: **sequential**



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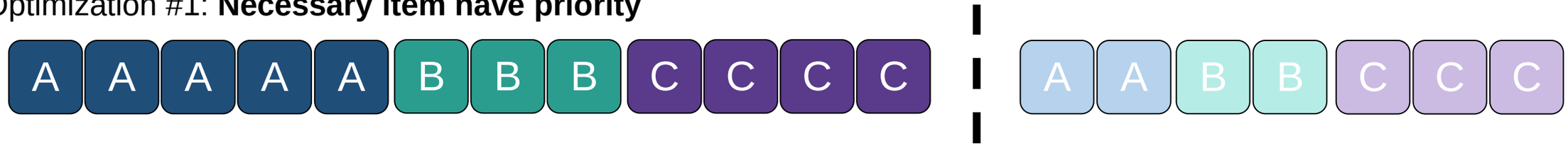


- Optimization #2: **Installation priorities (sequential)**

Supply focus end

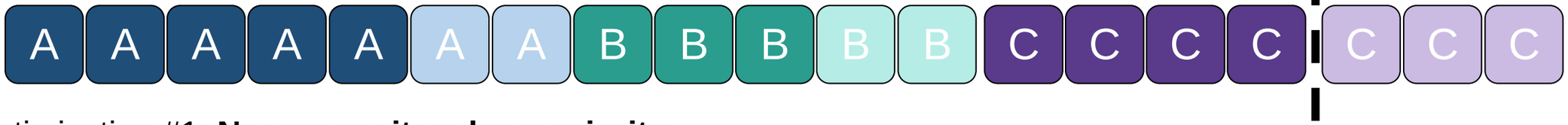
A Necessary Item

A Spare item

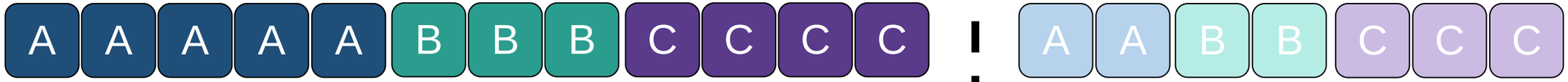
Resilient Continuity: Aligning Production with Installation – Trade Offs

RESILIENT CONTINUITY

- Suppliers Preferred Production Schedule: **sequential**



- Optimization #1: **Necessary item have priority**



- Optimization #2: **Installation priorities (sequential)**

- Optimization #2bis: **Installation priorities (full) –** USUALLY MORE TIME CONSUMING

COULD SAVE TIME DURING INSTALLATION

Supply focus end A Necessary Item A Spare item

Resilient Continuity: Phasing

RESILIENT CONTINUITY

Frequent Deliveries

Arrange for **frequent deliveries**, especially near end of the supply.

- Allow for progressive installation.
- Reduces installation efforts, spreading over longer.

Critical vacuum chambers deliveries will reach two-item (2x) or singular item (1x) deliveries near the end of the supply

Phased production Steps

- Staggered production starts and segmented FATs to enable parallel progress.
- *Differentiated* authorizations across product families to **decouple dependencies.**
- Compression of the timeline while maintaining overall quality and control.

Split pre-series in families, authorizing production for each independently

Fall-Back Plans

- Include alternative plans **directly embedded** in the production schedule.

Proactive Engagement: Challenge the Production

PROACTIVE ENGAGEMENT

Operation Lists Analysis

Request suppliers with the **full list of operations** involved in manufacturing.

- Forces suppliers to obtain clear understanding of their processes
- Allows for deep analysis of production, with possible optimizations becoming clearer

Time schedule challenge and optimization

Analyze the suppliers time schedule – ask questions, **challenge it**.

- Identification of Bottlenecks (time and resources wise).
- Operations stacking improvement
- Understanding impact of additional/missing resources

Proactive Engagement: Asking for a Credible Acceleration Plan

PROACTIVE ENGAGEMENT

Acceleration Plan

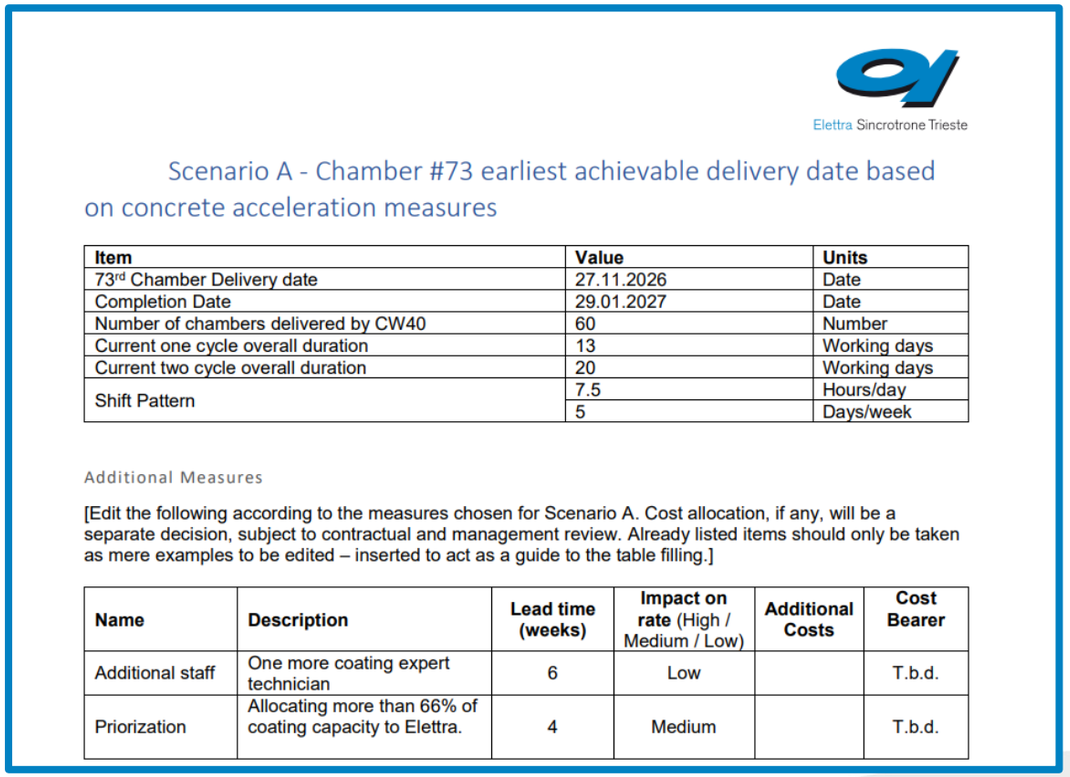
Document to request after time schedule and list of operation analysis

Objectives - Investigate on:

- Resources assigned and assignable to the supply (staff, coating lines…).
- Production shifts and their possible extension (late shifts, weekend usage).
- Operations redistribution
- Third party involvement.
- Impact evaluation of reducing requirements stringency.

Ask just for **two** scenarios:

A. Earliest achievable delivery date based on concrete measures
B. Delivery date on very challenging exact date (e.g. CW40-2026)



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Scenario A - Chamber #73 earliest achievable delivery date based on concrete acceleration measures

Item	Value	Units
73rd Chamber Delivery date	27.11.2026	Date
Completion Date	29.01.2027	Date
Number of chambers delivered by CW40	60	Number
Current one cycle overall duration	13	Working days
Current two cycle overall duration	20	Working days
Shift Pattern	7.5	Hours/day
	5	Days/week

Additional Measures

[Edit the following according to the measures chosen for Scenario A. Cost allocation, if any, will be a separate decision, subject to contractual and management review. Already listed items should only be taken as mere examples to be edited – inserted to act as a guide to the table filling.]

Name	Description	Lead time (weeks)	Impact on rate (High / Medium / Low)	Additional Costs	Cost Bearer
Additional staff	One more coating expert technician	6	Low		T.b.d.
Priorization	Allocating more than 66% of coating capacity to Elettra.	4	Medium		T.b.d.

Request it via a **prepared template,** to ensure proper info is shared back.

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When everything is late…
what do you **learn**?

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Lessons Learned: #1

Thoroughly test prototypes.

… before series does it for you.

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Lessons Learned: #2

The **easiest** gains come from *your own* time**.**

Plan it, streamline it, use it deliberately.

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Lessons Learned: #3

Know where to *concede* – and where to be **strict.**

Balance flexibility and control
to secure critical outcomes.

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Lessons Learned: #4

If *everything* is late, question the **requirements.**

Wishful timelines and over-ambitious specifications propagate delays across the entire supply chain.

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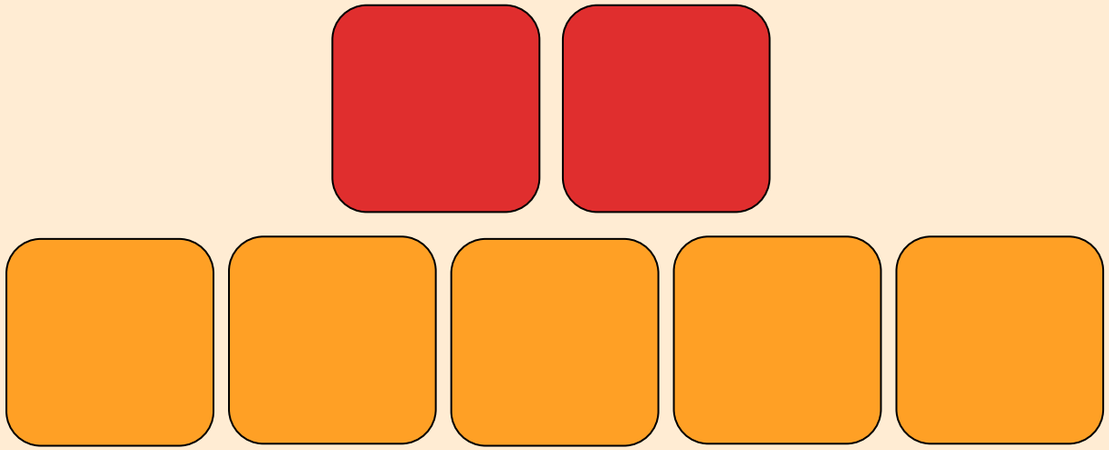
Lessons Learned: #5

Account for system-level constraints.

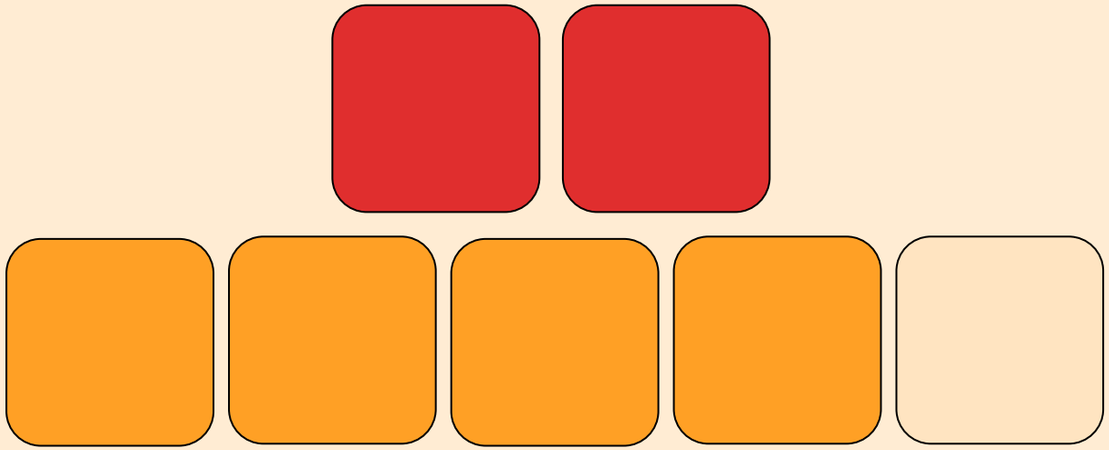
Concurrent projects competing for scarce specialized suppliers
create bottlenecks
beyond individual supply control.

Lessons Learned: #5bis



Concurrent projects competing for scarce specialized suppliers
create bottlenecks
beyond individual supply control.

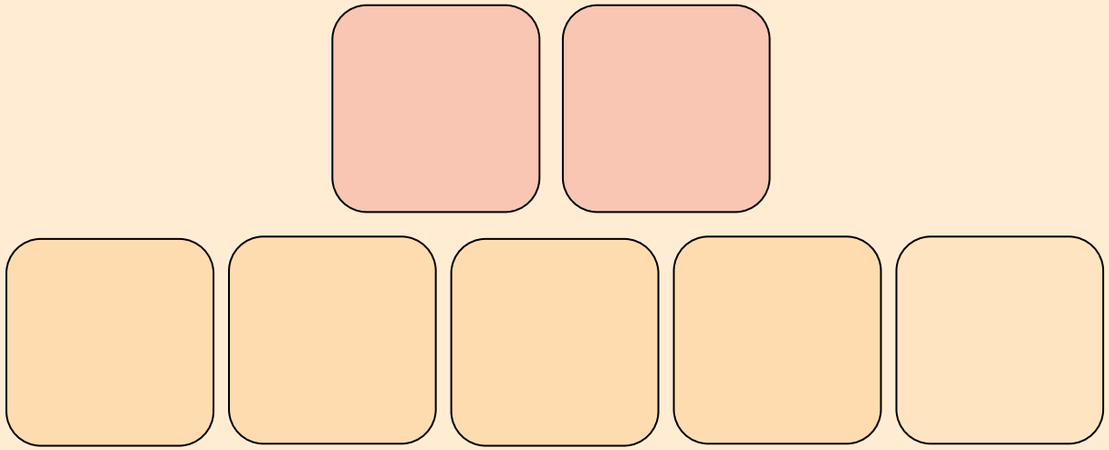
Lessons Learned: #5bis – NEG



6/7
V.C. involving NEG Coating

Concurrent projects competing for scarce specialized suppliers
create bottlenecks
beyond individual supply control.

Lessons Learned: #5ter – “Competition”



diamond

ALS

Concurrent projects competing for scarce specialized suppliers
create bottlenecks
beyond individual supply control.

Lessons Learned: #5ter – A Possible Collaboration Framework?

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SOLEIL II

diamond

ALBA

DESY.

HZB

ALS

Concurrent projects collaboration **beyond** individual bottlenecks.

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Wrapping Up

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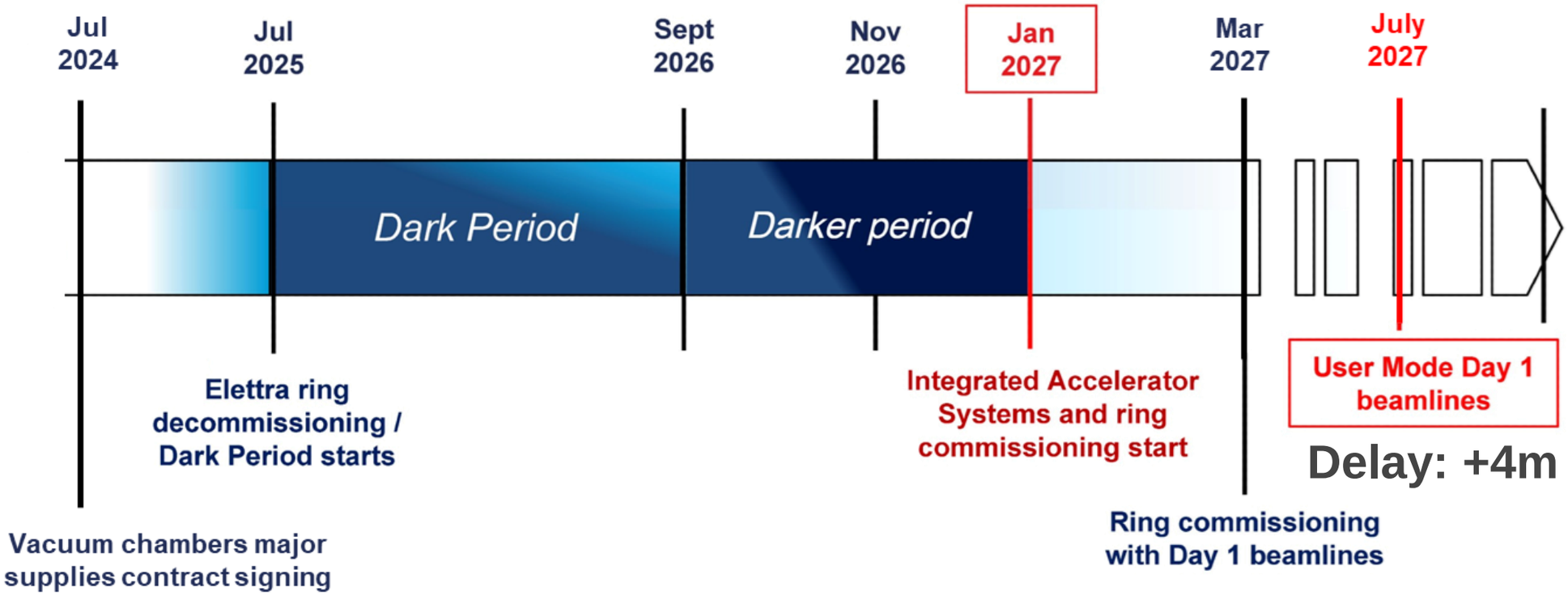
Outro – Elettra 2.0 Status

Project Timeline:



Outro – Elettra 2.0 Status

Project Timeline:

Delay: +1y

What would have been without intervention.

Elettra
Sincrotrone
Trieste

Thank you!

Critical Path Supplies

MULTIPOLE CHAMBERS

Mechanical Manufacturing:
<*Redacted*> - less recently part of a larger group.

NEG Coating:
The abovementioned large group.

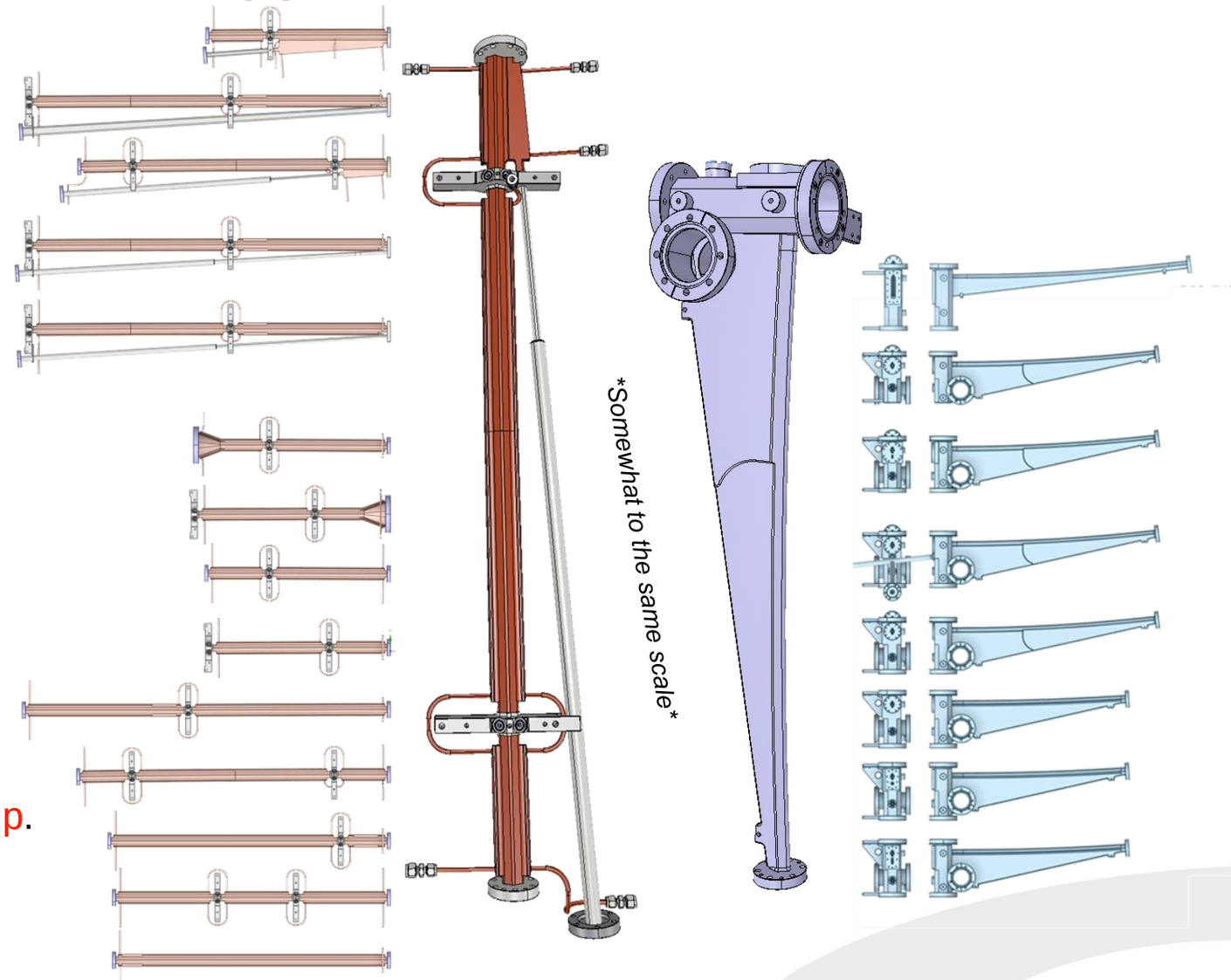
Forecasted Final Delivery: 18/12/2026

DIPOLE CHAMBERS

Mechanical Manufacturing:
Costruzioni Meccaniche – based in Rome, IT.

NEG Coating:
Three letters company – recently part of a larger group.

Forecasted Final Delivery: 27/11/2026



Resilient Continuity: Fall-Back Plan Example

RESILIENT CONTINUITY

“Fall-Back” Plan - CD#64

Storage ring closure without fully NEG coated dipole chambers.

	Needed	Ordered	Spares	UDL
ESVC300	10	12	2	Yes
ESVC301	12	13	1	
ESVC303	33	33	0	
ESVC304	5	6	1	Yes
ESVC305	4	6	2	Yes
ESVC326	5	7	2	
ESVC349	1	2	1	Yes
ESVC350	1	2	1	Yes
ESVC355	1	2	1	Yes
ESVP428	1	1	0	Yes

Criteria:

- Light Exits (UDL) need to be NEG Coated
- Minimum amount of additional chambers to be purchased.
- Spares used as buffer.
- First-of-series be used as additional coated chamber

FallBack_Plan CD#64 = 64 coated chambers supplied

- **8 uncoated / 65 coated chambers**
- 3 additional chambers to be purchased

Designed so that only two machine sectors will require venting for later substitution.

CAMERA	S01	S02	S03	S04	S05	S06	S07	S08	S09	S10	S11	S12
ESVC300	1	1	1	1	1	1	1	1		1		1
ESVC301	1	1	1	1	1	1	1	1	1	1	1	1
ESVC303	4	3	2	2	2	3	3	3	4	2	3	2
ESVC304		1			1	1	1				1	
ESVC305			1	1	1					1		
ESVC326			1	1				1		1		1
ESVC349											1	
ESVC355									1			
ESVP428												1