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ENGINEERING SUMMER SCHOOL

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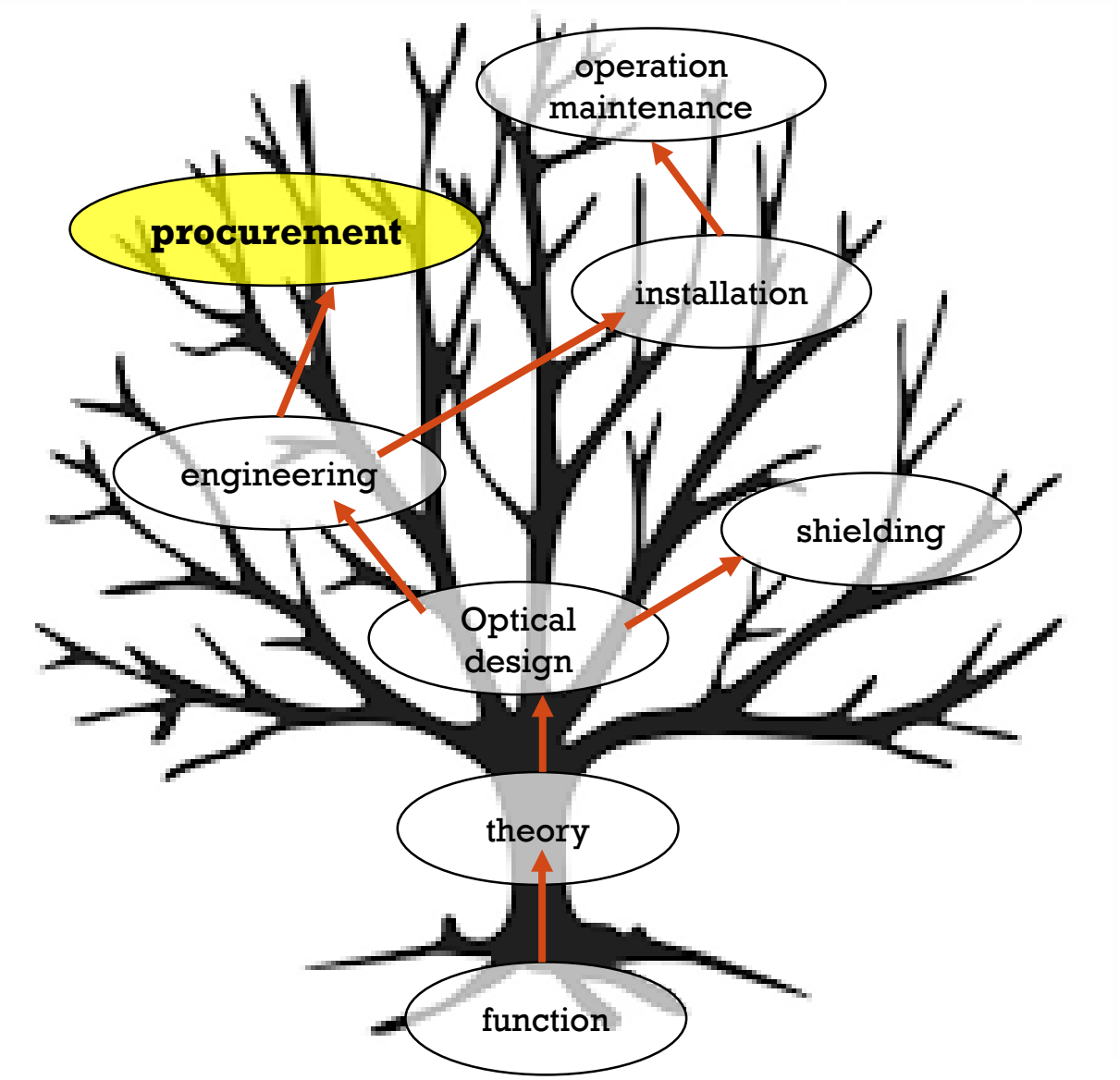
Part VII

Procurement (getting what you want)

BRANCHES



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GETTING WHAT YOU WANT

- What
- How
- When

and

- How much ?

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CLARITY IS EVERYTHING

PROCUREMENT DOCUMENTS

Splitting your information into a document package saves time in the long run

- Cover letter
- Technical specification
- Terms and conditions
- Project
  - Schedule
  - Payment plan
  - Scope of supply
- Quality plan (VVP)

Cover letter
Intro
Scope of tender
Tender conditions
Outline Production Schedule
Contact details
Document list

Contract, terms & conditions
General contract terms
Warranty
Payment shedule
Payment conditions
Rights to inspection
Packing
Transport

Verification & Validation program
Document scope
Validation plan
Verification plan
Test standards
Inspection regime
Production / Inspection Schedule

Technical specification
Document scope
Intro
Description
Requirements
Manufacture standards

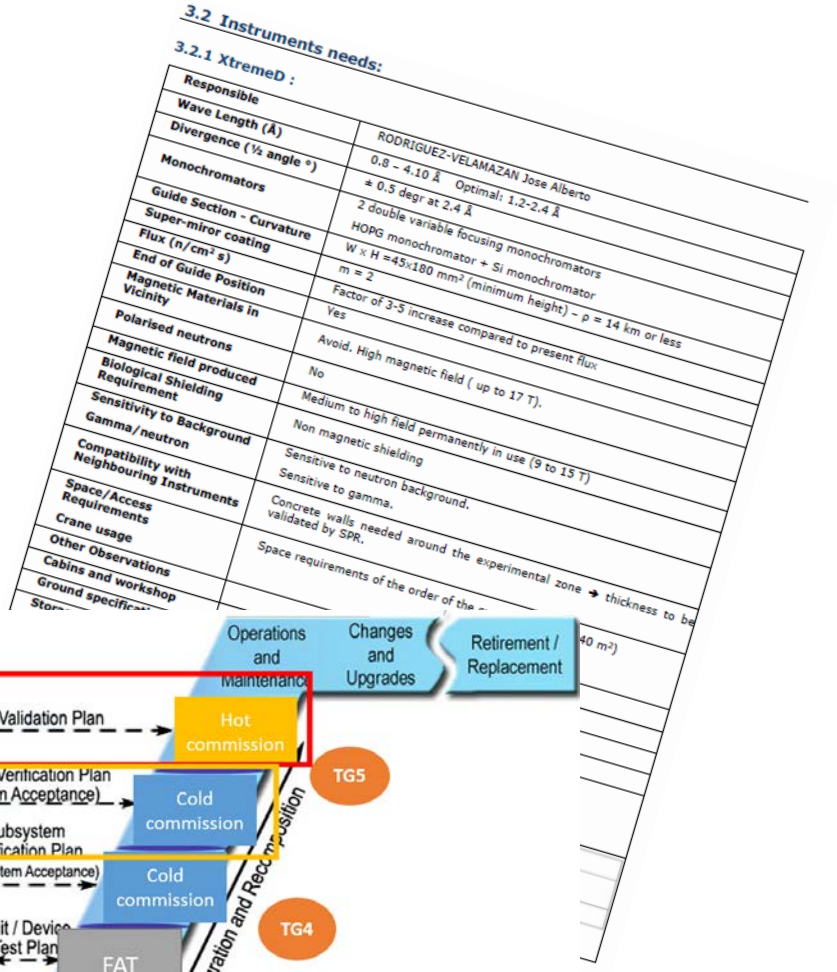
Annex
Test specifications
Manufacturing specifications
Preliminary drawings

TECHNICAL SPECIFICATION

Defines

- Scope of supply
- Detailed specification of the system
- Technical requirements
  - Section
  - Trajectory
  - Coating
- Technical constraints
  - Interfaces

- Single source or Multiple



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QUALITY PLAN

VVP (quality plan)

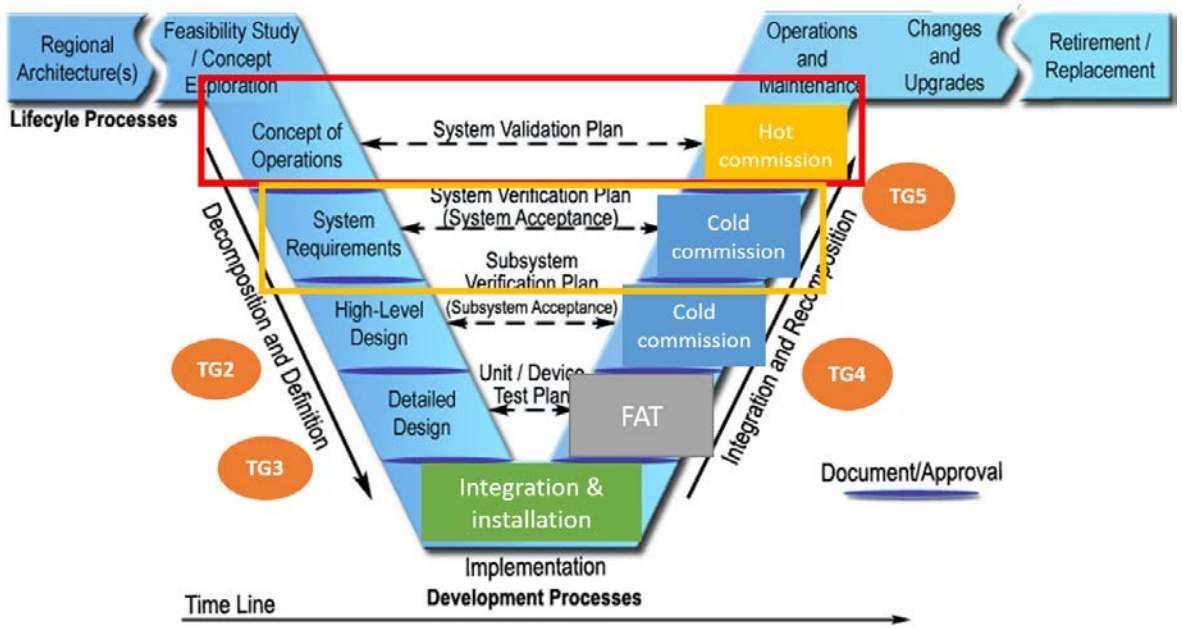
Validation and verification plan

How will the specified requirements be validated and verified

- By what means
- At what point in the project
- By who

What happens next

- Non-conformity



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TERMS
WARRANTY

A decision to take with reflection

- Scope
  - Parts
  - & Installation
  - & damages
- Limitation
  - Short
  - Long
  - Integrated flux
- Conditions due
  - Physical damage
  - Flux loss

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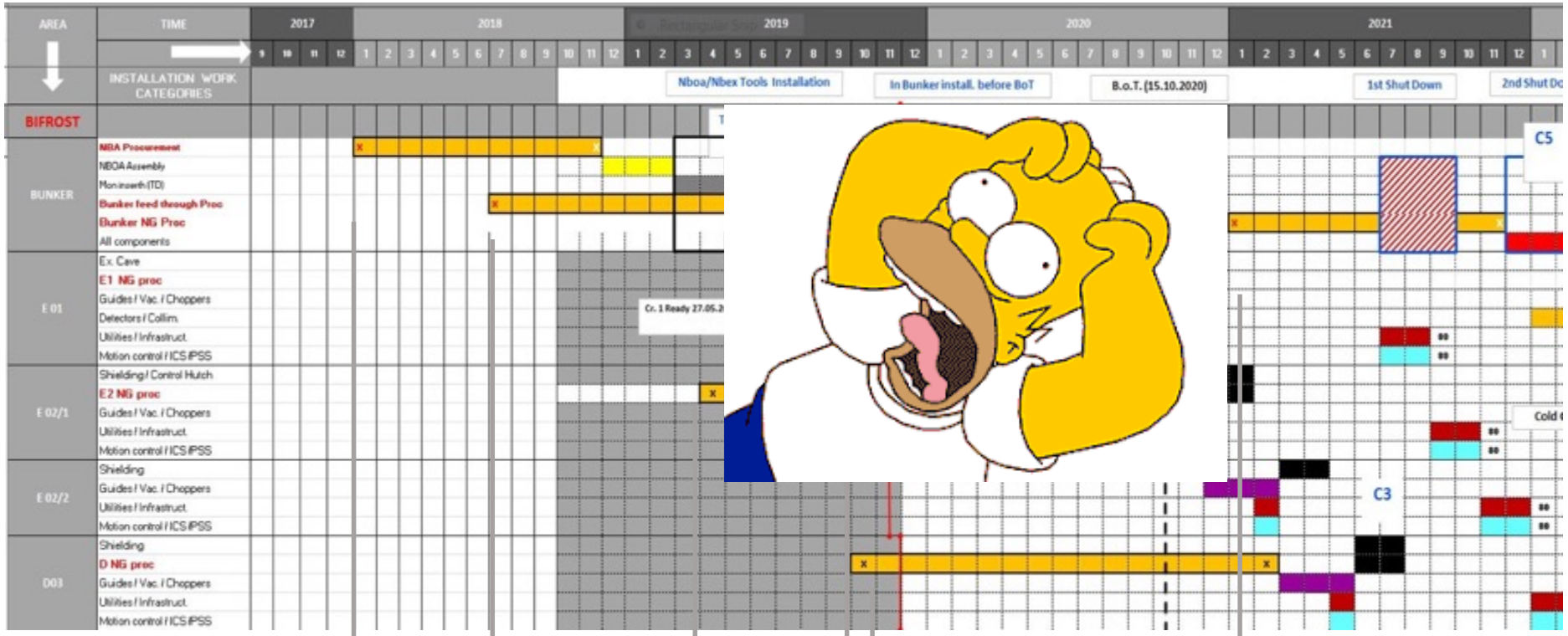
HOW DO YOU WANT IT

ORDER PLACEMENT SCHEDULE



(1) NBOA
Q4 2017

(2) BUNKER FT
Q2 2018

(3) E02 Guides
Q3 2019

(4) E01 Guides
Q1 2019

(5) D GUIDES
Q4 2019

(6) IN-BUNKER
Q4 2020

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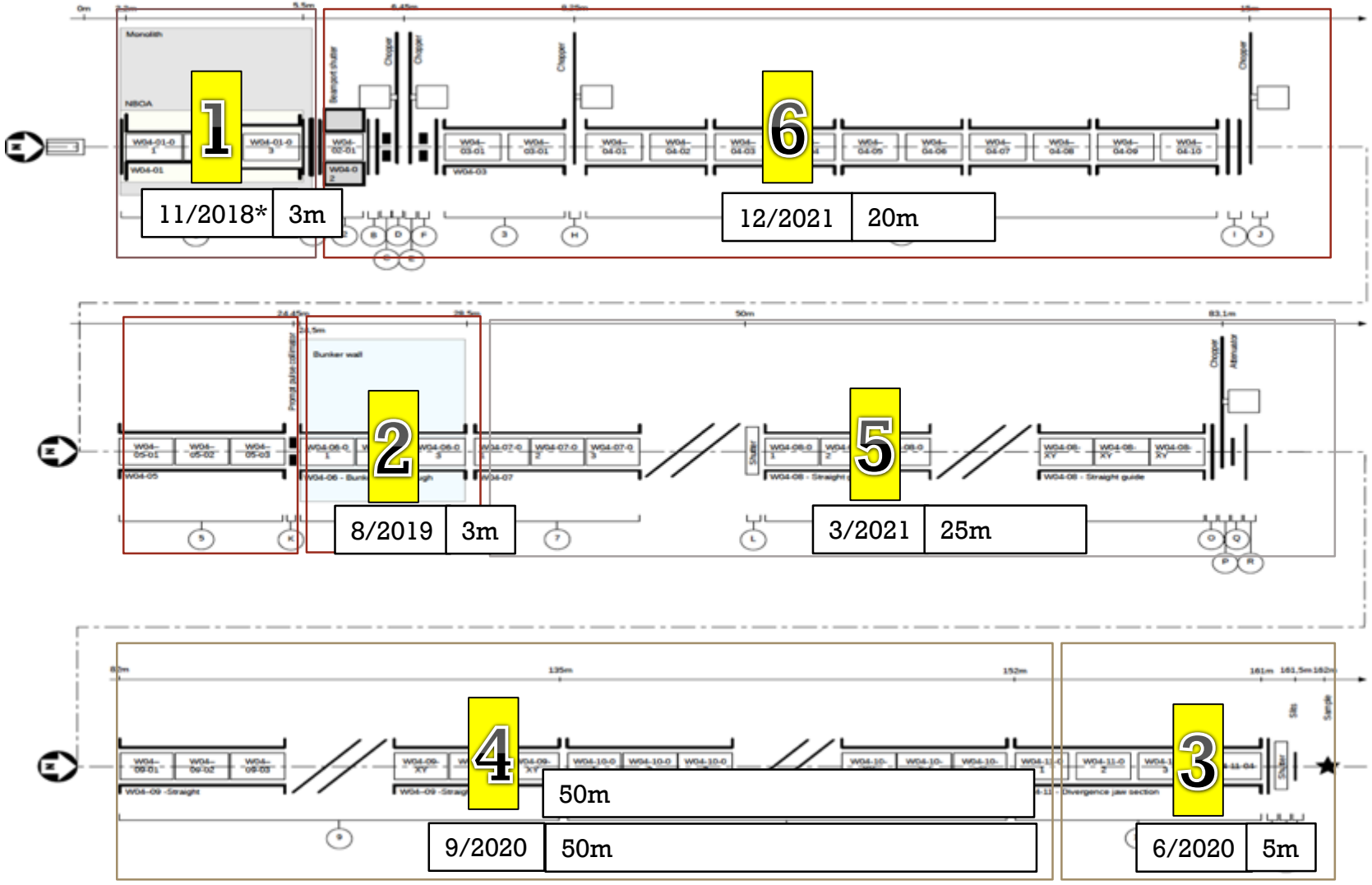
INSTALLATION PACKAGES = DELIVERY BATCH!!!



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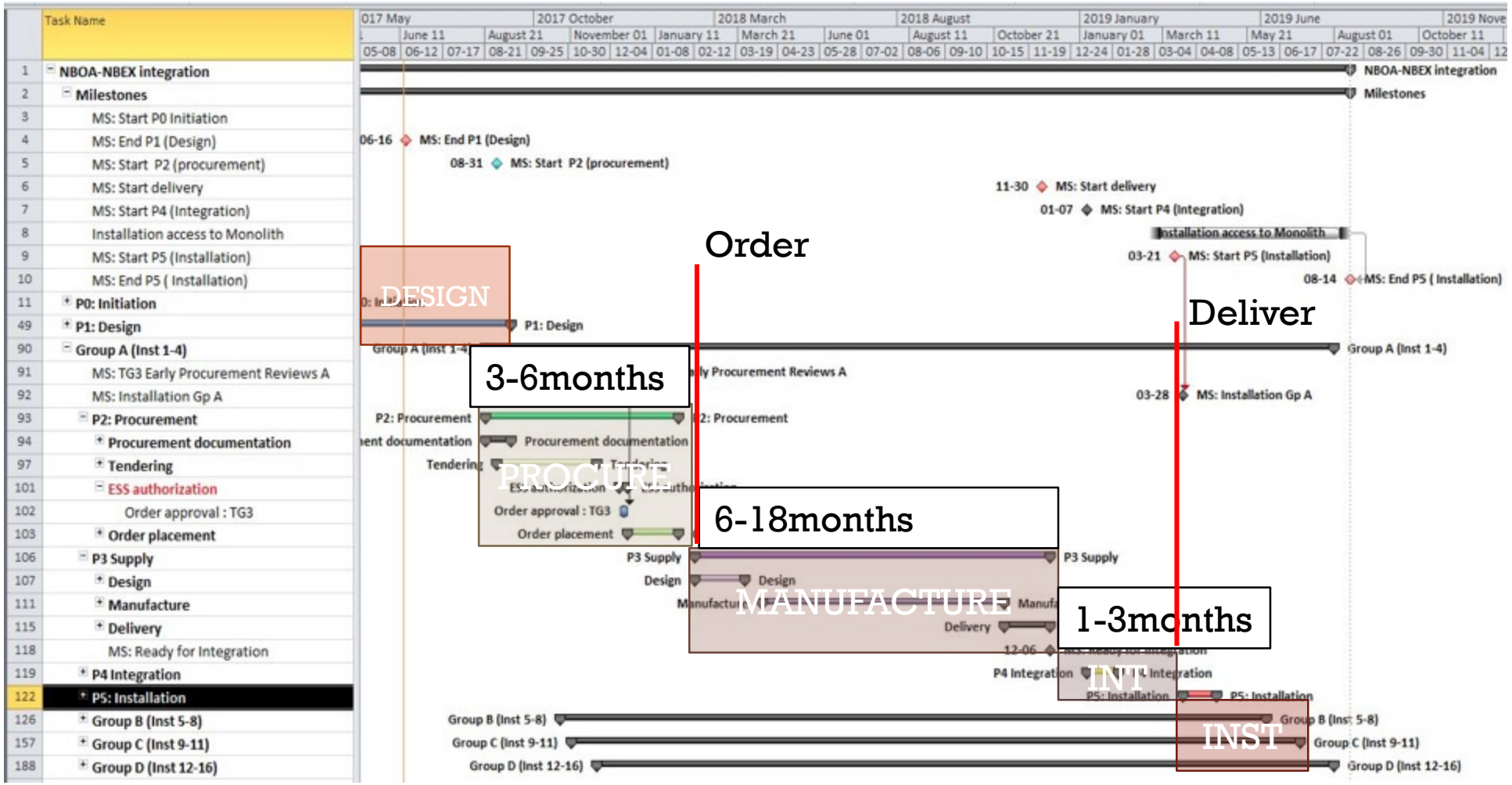
YOU WANT IT WHEN !

RETRO-PLANNING



INTERNAL COMPLEXITY

- Build sequence
- Build Schedule
- Access dates
- Use delivery batchs to manage risks.

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SUPPLY CHAIN

MIRROTRON

- 3 commercial suppliers
- 5 sputtering machines

S-DH

SwissNeutronics

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COMPETITION

- Small customer base
- Long service life
- Large order quantity
- Limited coordination

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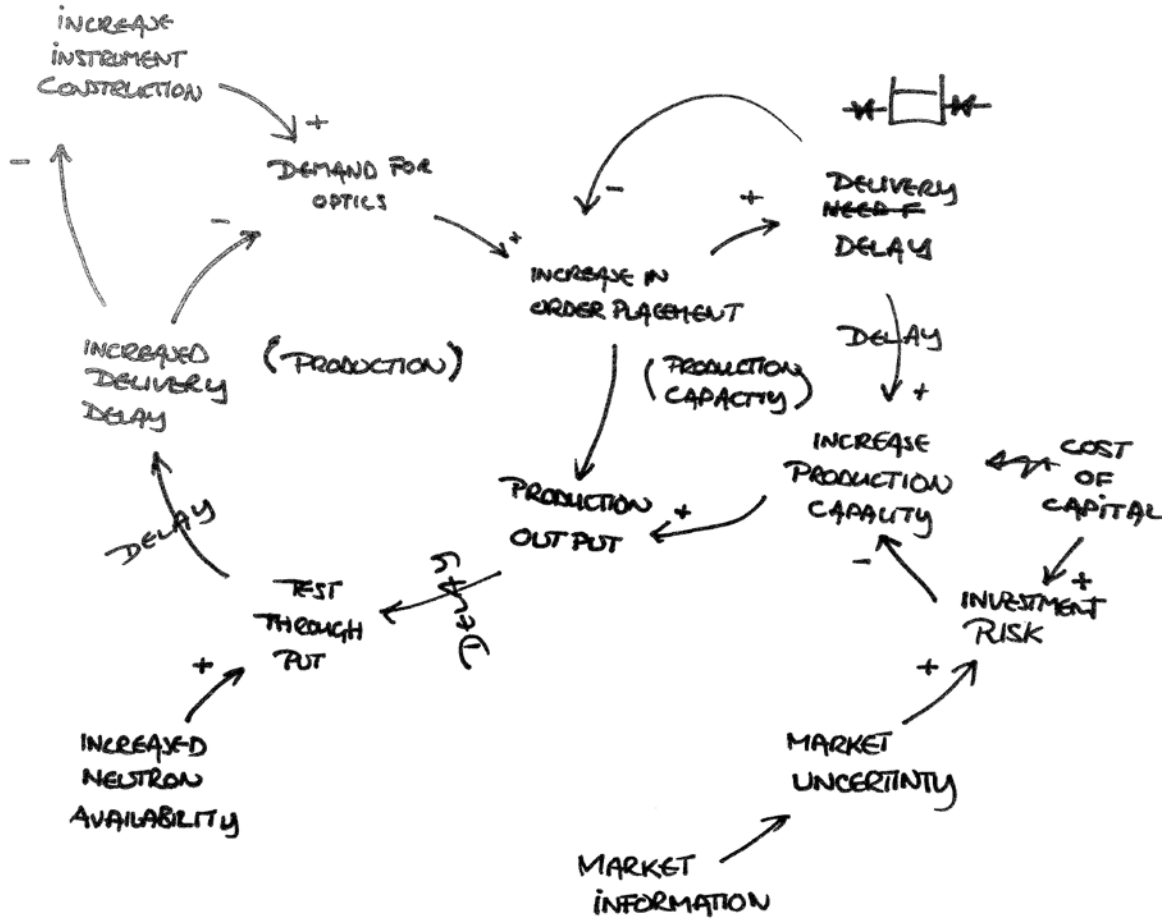
DYNAMIC RESPONSE

A typical response curve

System dynamic model of Neutron optic supply



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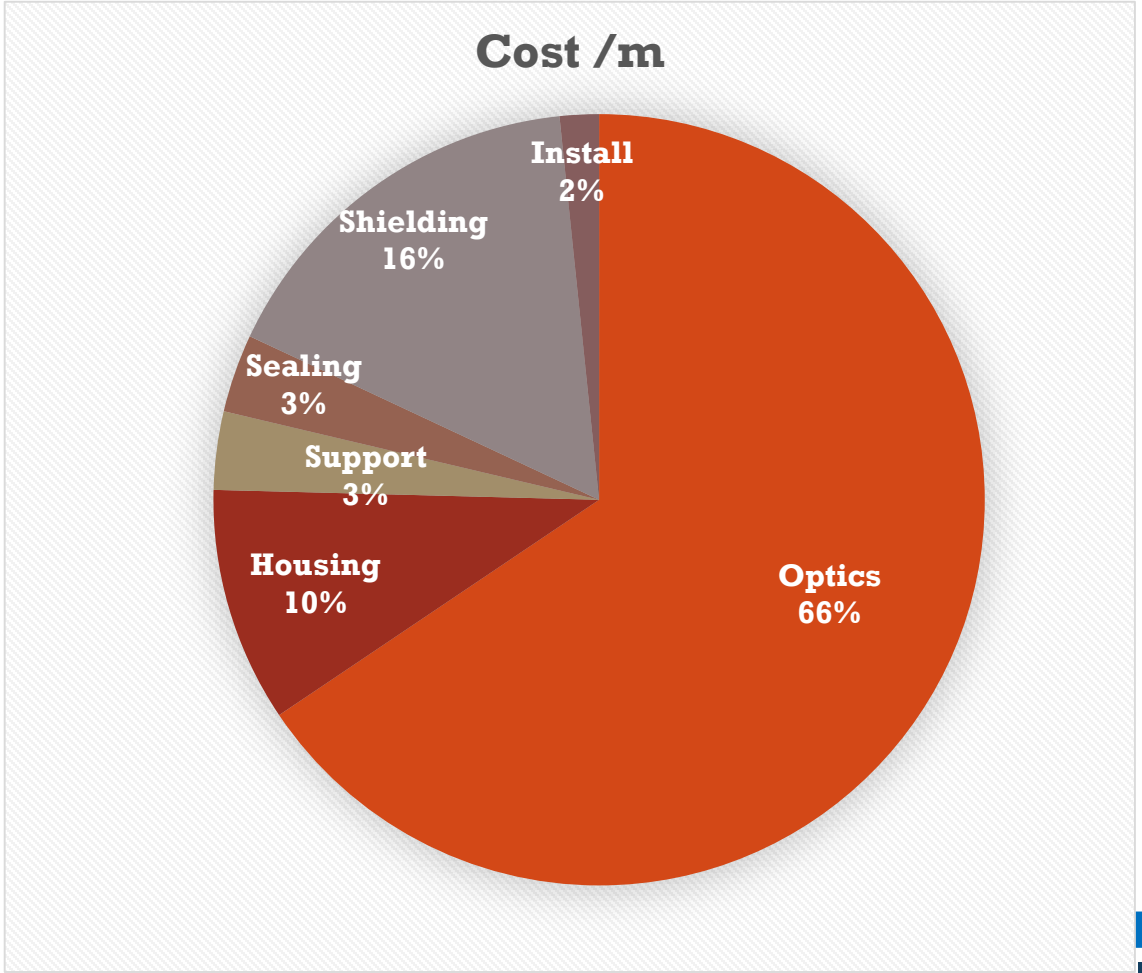
HOW MUCH

BREAKDOWN

- Optics 15/35kE
- Housings 2.5/7kE
- Support 1kE unit
- Shielding 9/15kE
- Seals 500/1000 pc
- Install 2kE/day



GUIDE PROJECT - COSTS COMPARISON

	H1I2	H14	H5	H24	H1H2 2030	H16
DURATION * *Year* *Com.Year*	3,5y 2011	3,5y 2012	5y 2014	4y 2020	4y 2020	3y 2019
LENGTH ** *Meter*	148	305	325 (250 replaced)	160	130	36
COST ** * €	3200	7100	7200	5100	4200	1000
Mean cost - K€/m	**22 K€**	**23 K€**	**29 K€**	**32K€**	**32K€**	**28K€**

** Execution + Commisioning phases* *** equivalent single guide* **** Manpower + Procurement*

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KEY POINTS

DESIGN FOR PROCUREMENT

- Specification
- Quality
- Schedule
- Cost

The success of your project and potentially you instrument may depend on how effectively you integrate constraints of procurement into the planning and engineering of you guide system

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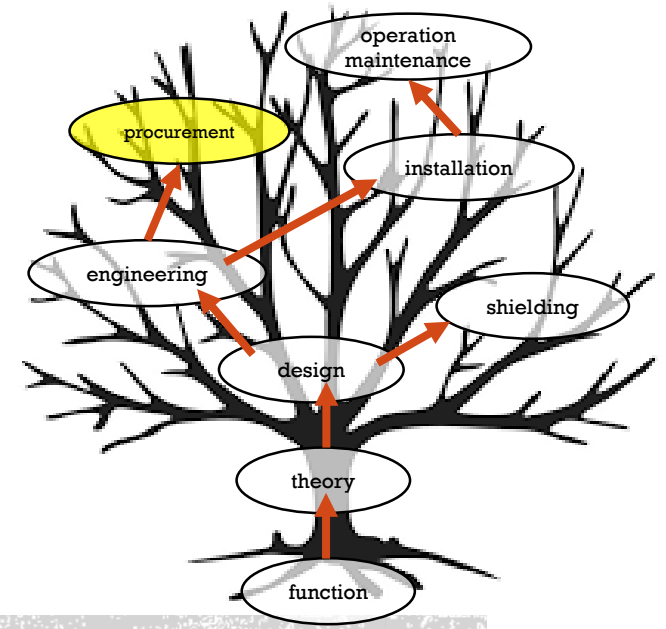
END OF THE LINE
PROCUREMENT



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