

# Phase 2 and TG3 processes

*- for the Instrument Teams-*

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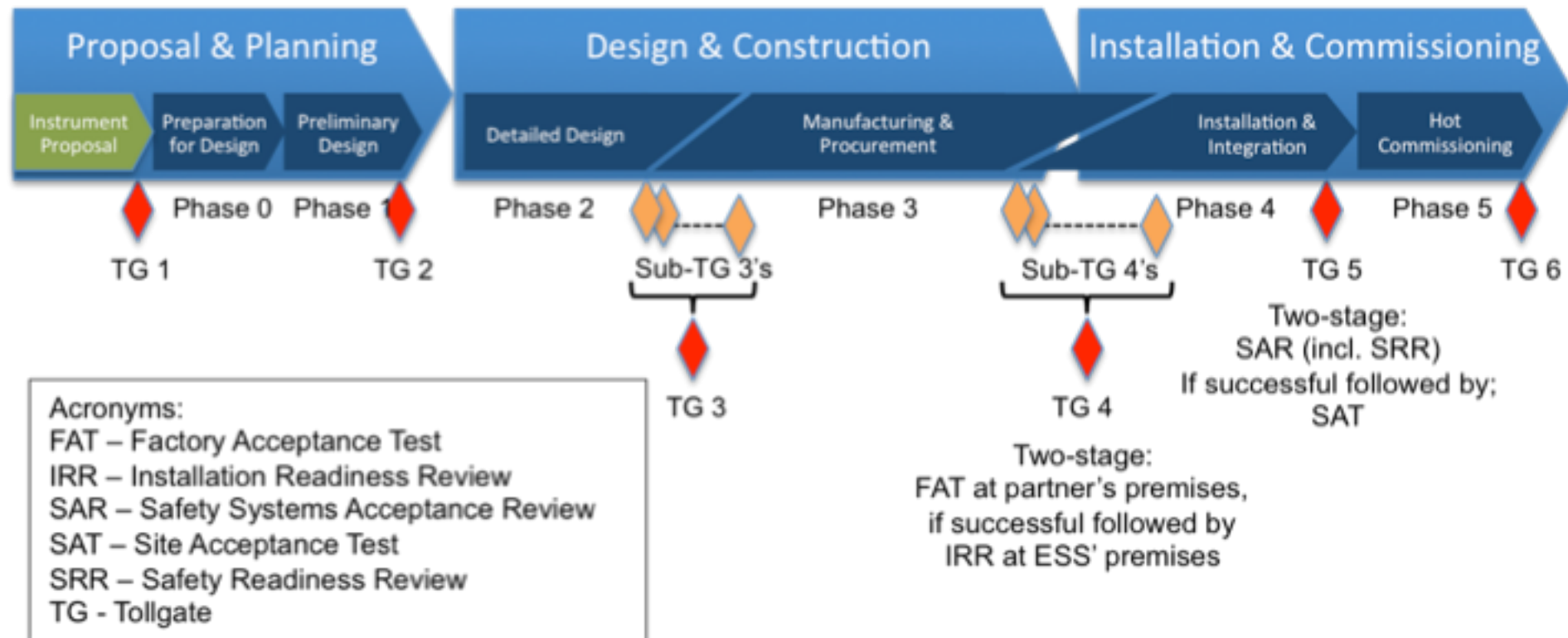
[www.europeanspallationsource.se](http://www.europeanspallationsource.se)  
11 September 2018

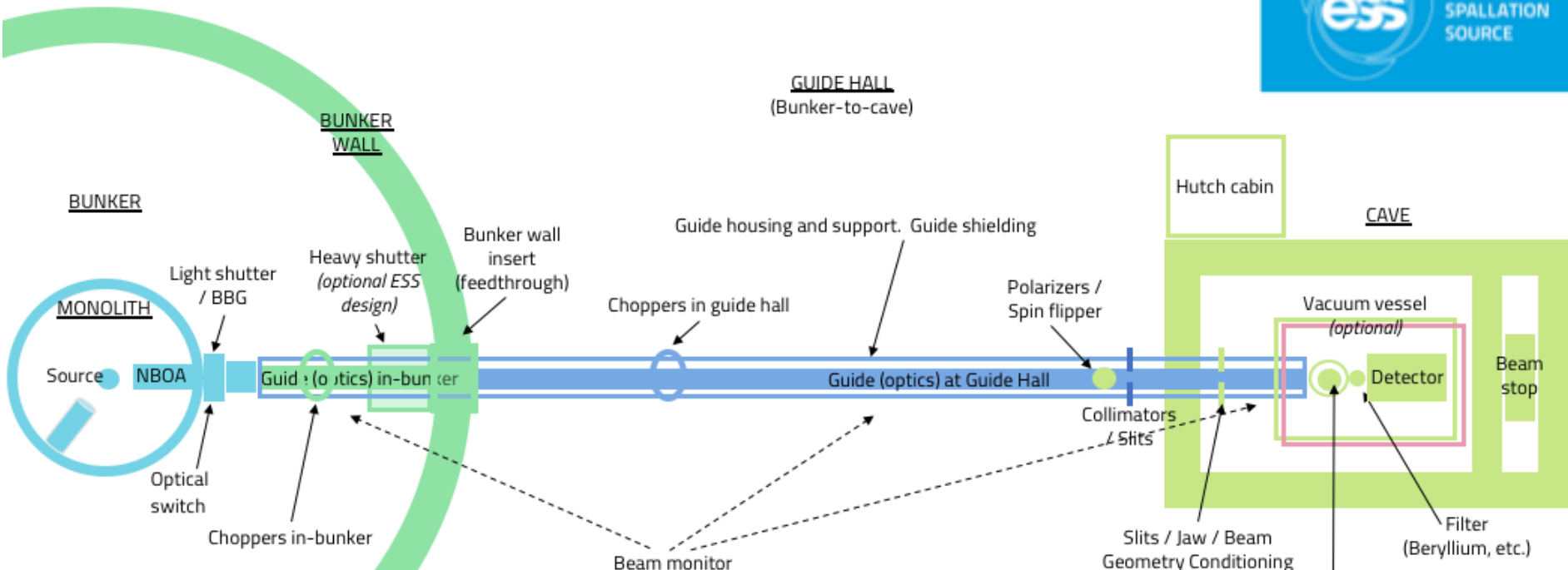
Phase 2

DESIGN

TG3

REVIEW





**Scheme of an instrument**  
 Baseline for the sub-systems included in the Toll-Gate 3 review  
*Based on a hypothetical generic instrument*

**Facility infrastructure connection**

- Fluid
- Cooling
- Gases
- Electricity
- Network
- DMSC
- EPICS
- Installation (crane, accesses, availability of CF)
- Remote handling
- PPS (Personal Protection System)
- (E.g.: Cave access; Interlocks and Hazard alarms)
- Quality (CE marking)

**Drawing package of complete system**



# TG3 schedule (motivations)

## Meet the requirements of the ESS project delivery schedule (rebaseline schedule for Neutron Beam Instruments –V4.0 May 2018)

Motivations behind this schedule:

- Schedule and preferred cluster of sub-systems by Inst. Teams
- Building access and Installation timelines (Building accesses: E01 and E02.1 Sep'19; E02.2 May'21; Bunker Jul'21; D03 Jan'21; D01 Jun'21)
- ESS reviewer resources
- Short(-work) months
- Prioritisation of instruments
- Cluster of sub-systems and components that are related (interfacing)

# Flow d

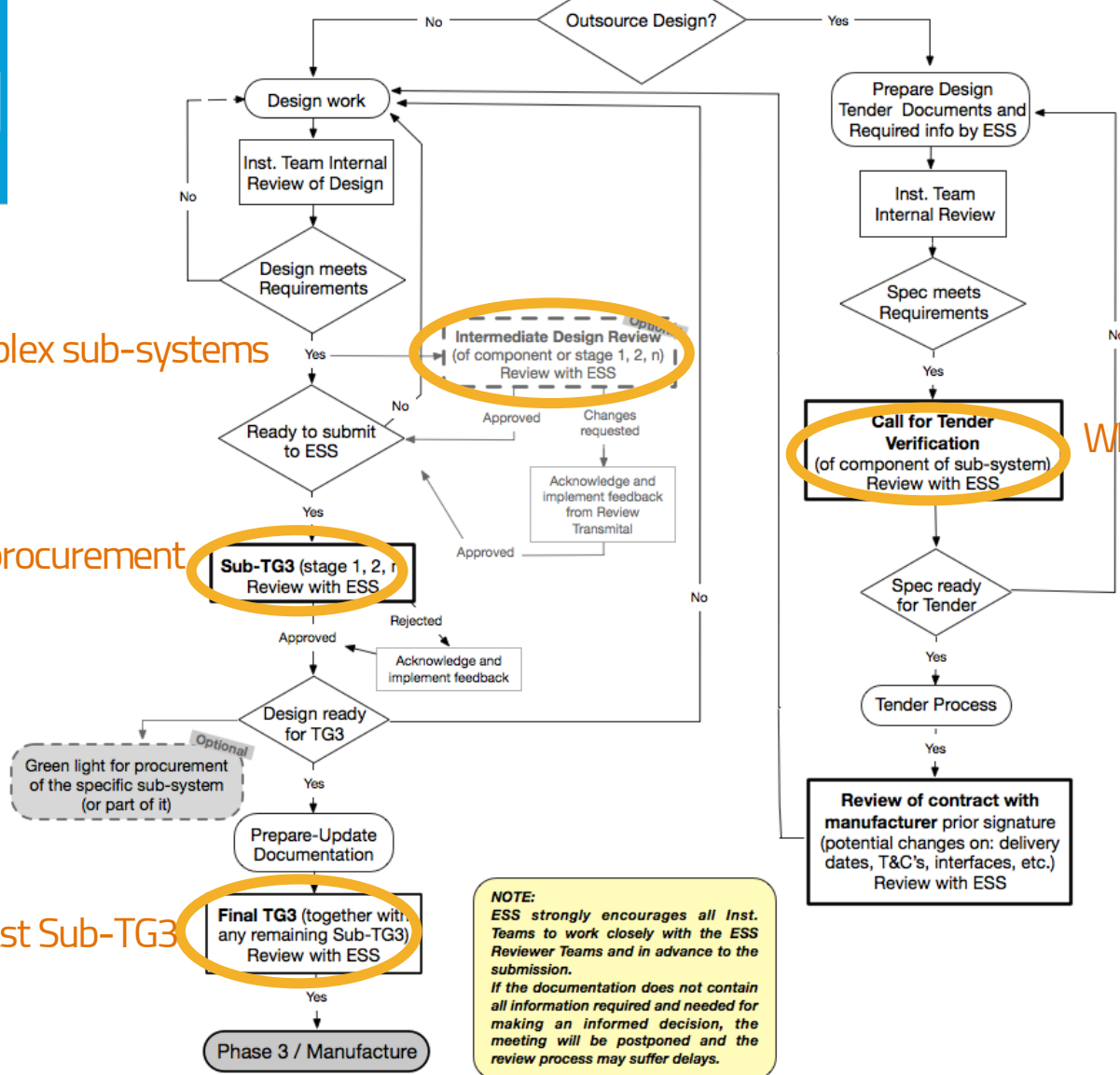


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For complex sub-systems

To facilitate early procurement

Together with last Sub-TG3



When outsourcing

**NOTE:**  
ESS strongly encourages all Inst. Teams to work closely with the ESS Reviewer Teams and in advance to the submission.  
If the documentation does not contain all information required and needed for making an informed decision, the meeting will be postponed and the review process may suffer delays.

# Confluence space

found in the  
file.

Pages / Instrument Projects / TG3 Meetings and additional information

## Phase 2 and TG3 processes

Created by Gabor Laszlo, last modified by Judith Freita Ramos just a moment ago

This Confluence page contains the practical information about the Phase 2 and TG3 processes.

- Concepts:
- Three main baseline documents:
- Phase2 and TG3 Process Diagram: PDF
- Calendar link
- Schedule for TG3
- Table: Deliverables; Relevant documents; Process description; Reviewers
- Table of Reviewers per Sub-system Spreadsheet
- Relevant links:





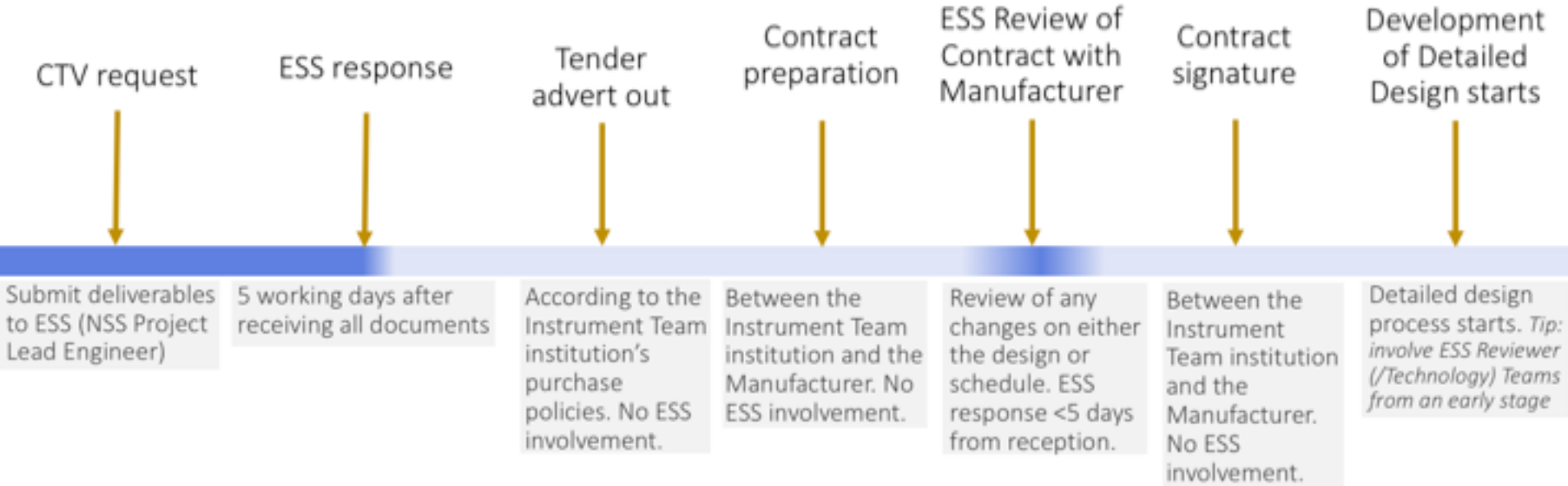
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Confluence space:  
 Table of  
 - Deliverables  
 - Relevant documents  
 - Description, flow and timeline  
 - Reviewer

Deliverable	Relevant documents	Description, flow and timeline	Reviewer
<p>1. <b>Call for Tender Verification (CTV)</b> (if applicable)</p> <p>Submission of documentation.</p> <p>Deliverables (all in a CHESSE document including as either text or annex):</p> <ul style="list-style-type: none"> <li>Schedule (including key milestones such as approval points for detailed design), payment milestones, acceptance testing, ...)</li> <li>Any measurements and tests expected during the manufacturing process (either performed by the Inst. Team or by the Manufacturer) must be clear to ESS, i.e., described in the Detailed Design documentation.</li> <li>Draft of the call for tender (minimum, schedule and technical specification" or SDCD if available, and warranty clauses if there are such)</li> <li>Declaration of conformity with Appendix 1</li> </ul> <p>ESS-0212907</p> <p>(Refer to the relevant documents from each ESS Reviewer Team or next column, and see example of technical content for MDC).</p>	<p>ESS-0212907 NBS Guideline for Instrument Construction Projects - TG3 Review and Decision) Appendix 1 contains the list of what the procurement contract should contain.</p> <p>ESS-0134254 (Example: T3.6.4.2.7 MDC Sample Positioner) - Please, feel free to use this early document as an example of a "Call for Tender Verification", but only for the technical specification content as it lacks the rest of input required on the left column.</p> <p>ESS-0034017 (Example for Template for Technical Specification for «instrument» Neutron Chopper System)</p> <p>Example: <a href="#">Technical Specifications EBOV NBS4 SwissNeutronics release</a></p> <p><b>The Inst. Teams are encouraged to maintain contact with the ESS Expert Reviewer Teams during the work process, in advance to the review.</b></p>	<p>Call for Tender Verification (CTV) stage applies to those sub-systems and components which detailed design, and not only the manufacturing, will be outsourced. For the procurement verification ESS requires the tender(contract documents).</p> <p>The tendering is the responsibility of the Instrument Team together with its institute. ESS holds the responsibility to verify various project aspects. Aspects subject of revision and revision approach:</p> <ul style="list-style-type: none"> <li>The involved ESS Reviewer Group reviews the technical content of the tender. They do not provide feedback, only if there is an issue.</li> <li>The technical specification should comply with the requirements established by the relevant ESS Reviewer Team, as well as the applicable sub-system requirements for Early Procurement stage.</li> <li>ESS will evaluate if the planning is compatible with the instrument specific and NBS schedule, as well as global resource plan of the instrument suite</li> </ul> <p>The parts of the contract/tender relevant for the requirements above shall be translated to English.</p> <p>If the ESS completeness requirements are not compatible with the partner institute rules, then the specific issue has to be discussed and addressed by a common agreement. If the instruments schedule or resource plan is conflicting with NBS project planning, then the issue has to be discussed between ESS and the Instrument Team and the consequences have to be evaluated.</p> <p>ESS aims to respond (approval or request for further details) within 7 working days after receiving all the documents). ESS shall be notified if there are changes in the tendering conditions after the call for tender before signing the contract. This is the <b>Review of the Contract</b> marked on the Flow Diagram.</p> <p><b>Flow and Timeshane of CTV:</b></p>	<p>Relevant ESS Reviewer Teams</p> <p>NBS project Integration Group  <b>Marie-Louise</b></p> <p>Declaration of conformity with Appendix 1                  ESS-0212907                  Gabor Lazaro</p> <p>The Inst. Teams are encouraged to maintain contact with the ESS Expert Reviewer Teams during the work process, in advance to the review.</p>
<p>2. <b>Intermediate Design Review (IDR)</b> (optional)</p> <p>Submission of documentation followed by a Presentation at ESS of</p>	<p>ESS-0212907 NBS Guideline for Instrument Construction Projects - TG3 Review and Decision) Appendix 1 contains the list of what the procurement contract should contain.</p> <p>ESS-0229466 (TG3 Neutron Chopper</p>	<p>The Intermediate Detailed Design Review (IDR) is an optional in-person meeting granted by the ESS for particularly complex sub-systems and components. It offers the chance for the Instrument Team to ensure that the progress on the detailed design is aligned with the ESS requirements. Its ultimate aim is to make the correspondent Sub-TG3 more agile by having the design informally reviewed by the relevant ESS Reviewer Team(s). Providing that the requests on the <b>Review Transmittal</b> issued by the ESS Lead Engineer to the Instrument Team get addressed, the Sub-TG3 will be a swift step which may be dealt with remotely. IDR meetings shall be motivated via e-mail.</p>	<p>Relevant ESS Reviewer Teams</p> <p>A Review Transmittal will be</p>

# Input from Instrument Teams: CTV

## Call for Tender Verification (CTV) timeline



# CTV: deliverables

## Call for Tender Verification (CTV) timeline

CTV request



Submit deliverables  
to ESS (NSS Project  
Lead Engineer)

**Schedule** (key milestones;  
payment milestones; acceptance  
testing...)

**Measurements and tests**  
expected during the  
manufacturing process

**Draft of the call for tender**  
(schedule and technical specification,  
and warranty clauses)

**Declaration of conformity**  
with Appendix 1 [ESS-0212907](#)

# Manufacturer timeline and TG3

## Manufacturer timeline and TG3 for an outsourced detailed engineering (after Call for Tender)

Contract signature:  
Inst. Team institution -  
Manufacturer

Intermediate Detailed  
Design Review (IDR)  
with ESS

Sub-TG3

Approval of  
manufacturing

Start of the design &  
manufacturing process

Schedule the IDR with the  
manufacturer about 1,5-2 months  
before the relevant Sub-TG3

IDR of: **1)** 3D model; **2)** 1<sup>st</sup> sketch of  
Sub-System Design Description  
(SSDD); **3)** Draft of the System Design  
Description (SDD)

The in-person meeting will be  
followed by a Review Transmittal (RT)  
with follow-up questions and changes

Sub-TG3 should be scheduled when:

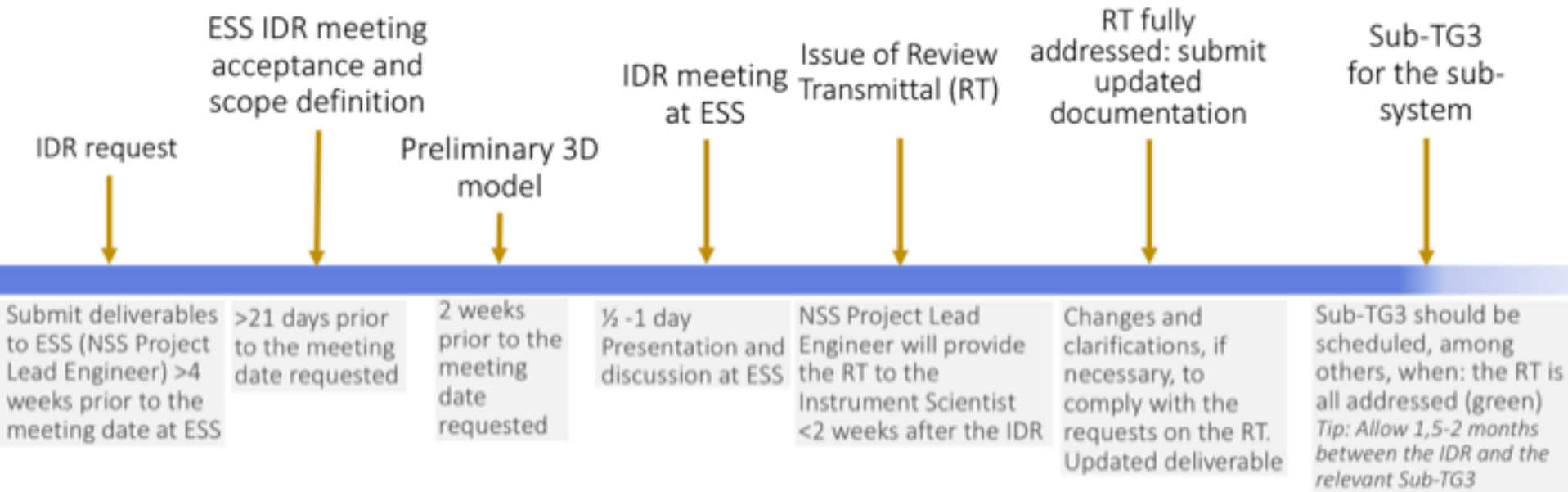
- 1)** The RT is fully addressed (i.e., all  
requests on it show green)
- 2)** All manufacturing drawings  
(Detailed Design) shall be available for  
the Sub-TG3 of the sub-system

Approval based on the Sub-  
TG3: will give green light to  
the actual manufacturing of  
the sub-system/component

# Input from Instrument Teams: IDR

found in the  
file.

## Intermediate Detailed Design Review (IDR) timeline



# IDR: deliverables

## Intermediate Detailed Design Review (IDR) timeline

IDR request



Submit deliverables  
to ESS (NSS Project  
Lead Engineer) >4  
weeks prior to the  
meeting date at ESS

### Draft of SSDD

Intro: systematic relation of the sub-system to the whole-system from operational perspective

Sub-system requirements

Updated Bill of Materials for Activation Inventory

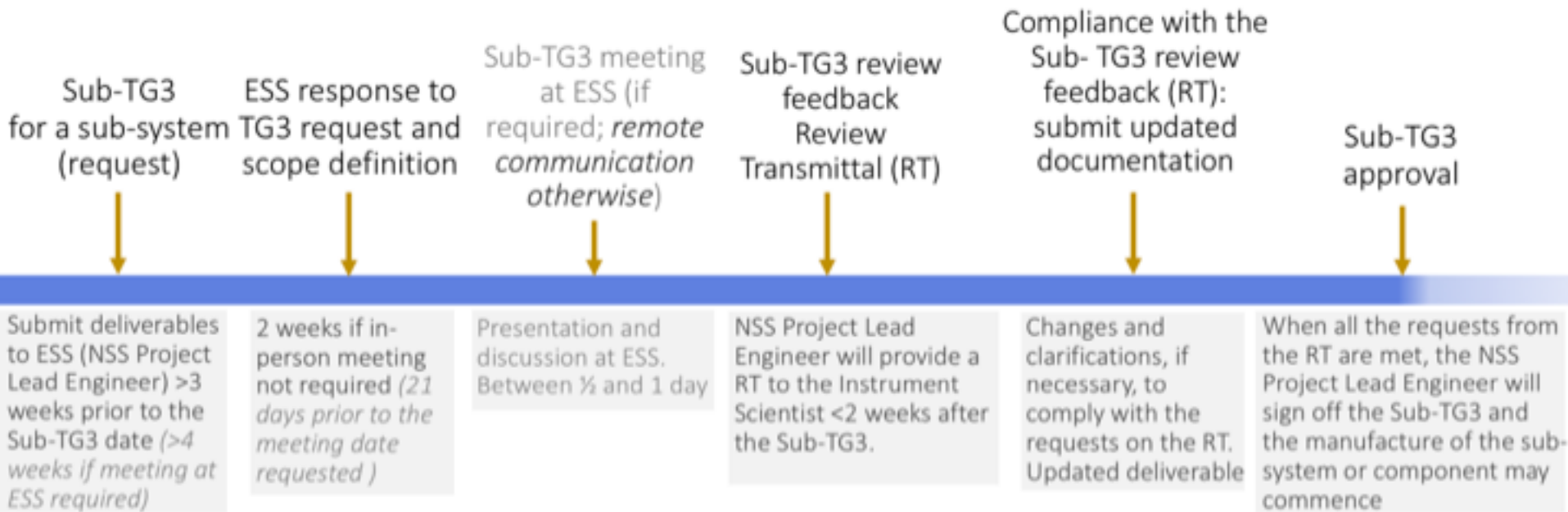
Prel. 3D model (2 weeks prior to the meeting)

Updated documentation after RT completed

# Input from Instrument Teams: Sub-TG3

found in the file.

## Sub-TG3 timeline



Last Sub-TG3 together with Final TG3

# Sub-TG3: deliverables

ESS-0099059



found in the file.

## Sub-TG3 timeline

Sub-TG3  
for a sub-system  
(request)



Submit deliverables  
to ESS (NSS Project  
Lead Engineer) >3  
weeks prior to the  
Sub-TG3 date (>4  
weeks if meeting at  
ESS required)

### SSDD Sub-System Design Description

Sub-system requirements

Draft of System Integration  
and Verification Plan

Draft of System Validation  
Plan

Systems Operation and  
Maintenance Manual

Instrument Hazard Analysis

3D Model of the complete  
system

Updated project documents

Actual Project Schedule

Draft of Project Quality Plan

Updated Bill of Materials for  
Activation Inventory

Draft of SDD with complete list  
of deliverables

Drawings/picts (in English)

Process and Instrumentation  
diagrams

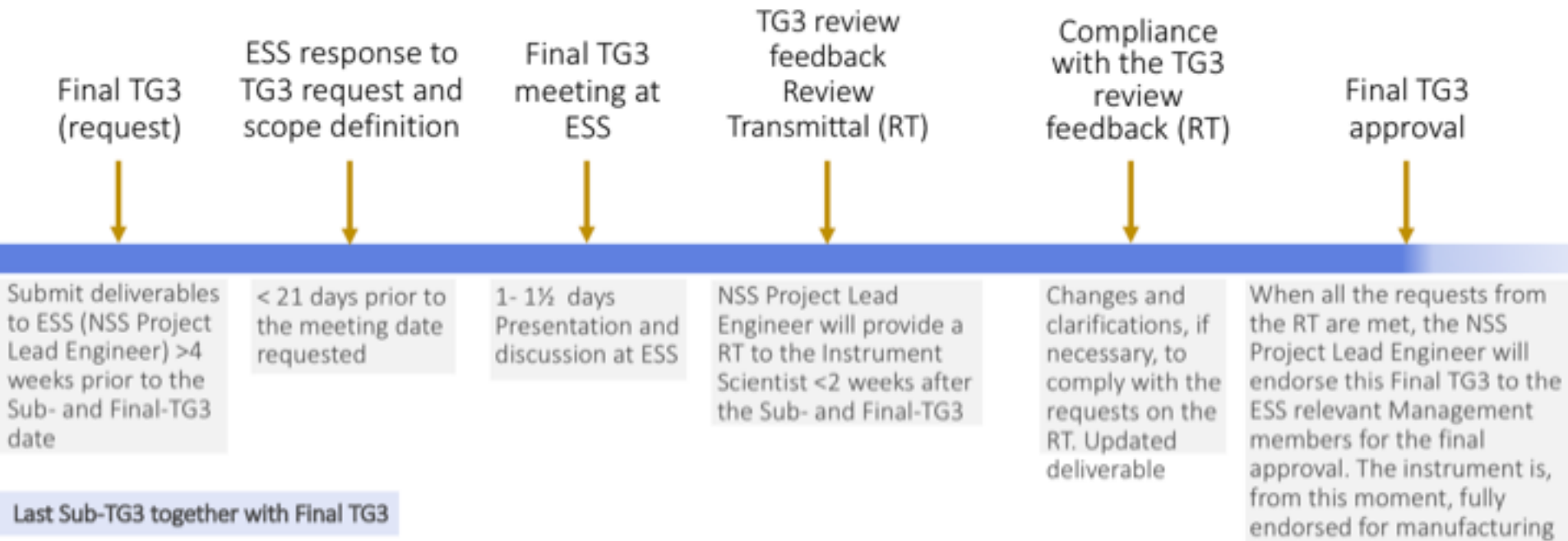
Hazard analysis



# Input from Instrument Teams: Final TG3

found in the  
file.

## Final TG3 timeline



## Final TG3 timeline

Final TG3  
(request)



Submit deliverables  
to ESS (NSS Project  
Lead Engineer) >4  
weeks prior to the  
Sub- and Final-TG3  
date

### SDD System Design Description

References to the SSDD's of  
the previous stages

Description of the external  
interfaces to the System

System design for integration  
to Data acquisition and data  
analysis systems

Operational analysis of  
integration to Sample  
Environment Equipment and  
Lab Infrastructure & Logistics

Design of external  
infrastructural interfaces

Certificate of Conformity for  
Hazardous Materials and  
Sustainability

Relevant sub-system  
requirements

# Making TG3 an agile process

Phase 2

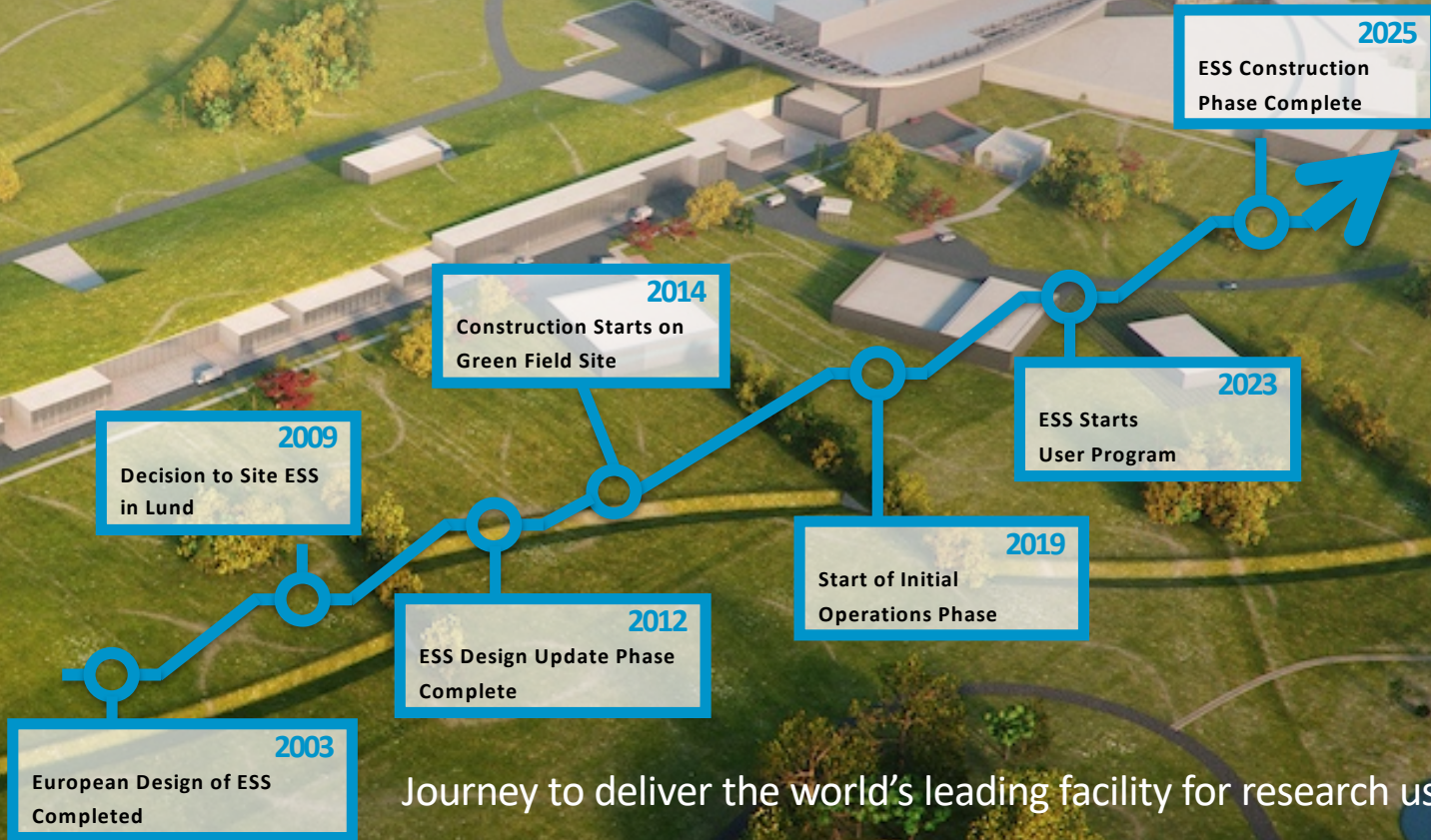
## DESIGN

TG3

## REVIEW

- IDR for complex sub-systems/components
- Sub-TG3
- Review Transmittal
- NSS Lead Instrument Engineer: hub
- Confluence page for Phase 2 and TG3
- **ESS Reviewer Teams available for the Inst. Teams along the development of their detail design**

# Thank you



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