



**Introduction to the ECLGRM-VHF IS role**

# **The role of the ECLGRM-VHF IS in the SVOM alert timeline**

**Frédéric Daigne (IAP) & Fred Piron (LUPM)**

# The role of the ECLGRM-VHF IS



The role of the IS ECLGRM-VHF is:

- **to validate as soon as possible the scientific products generated by the quicklook analysis of ECLAIRs and GRM data received by the VHF network before the full X-band data become available.**
- **to make the validated scientific products public, in the HE GCN circular and on the SVOM GRB Table.**

**This provides an important information in near-real time on the GRBs detected by SVOM for observers involved in the follow-up (within/outside SVOM) and for shifters in other GRB missions (e.g. Fermi).**

# SVOM alert timeline (ECL trigger)

Flowchart prepared by Damien Turpin and already used for the BA-F and BA-T training sessions.

Flowchart of the SVOM scientific operation for the Core Program ECLAIRS triggers

## Instrument Centers

## BA FSC/CSC

Real-time (Urgent actions)

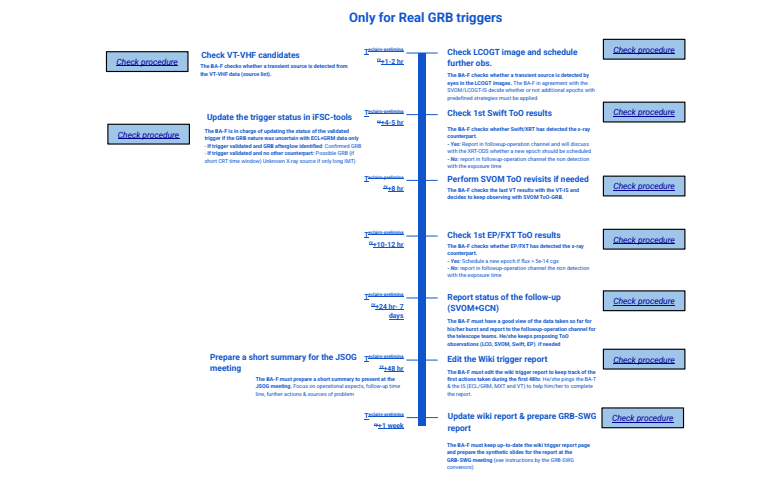
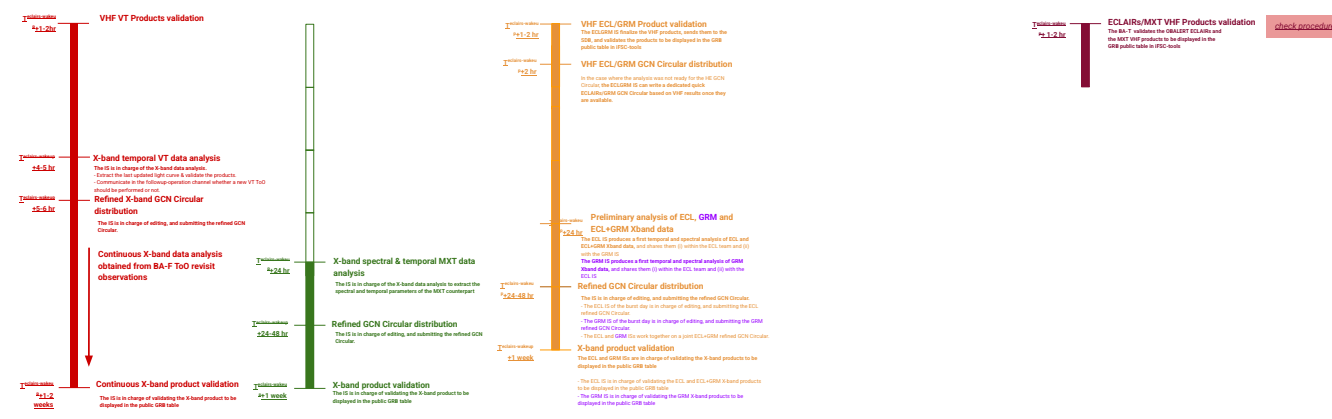
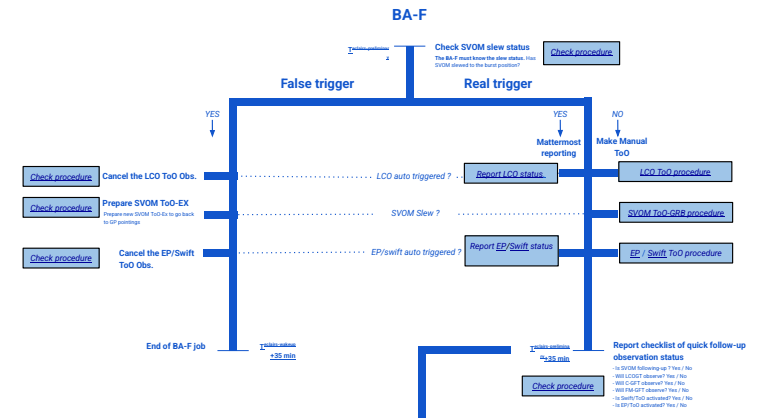
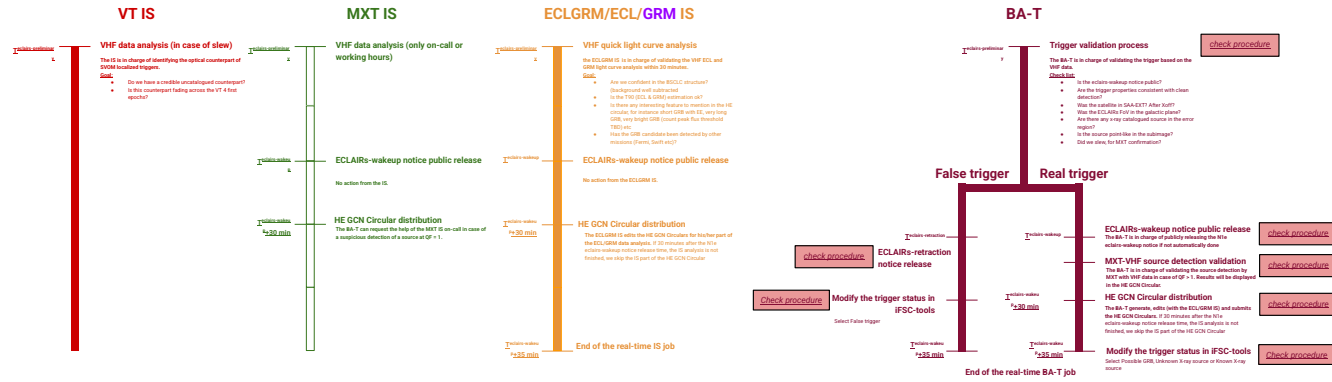
Real-time (Urgent actions)

short/mid term actions

short/mid term actions

Daily routine work

Daily routine work

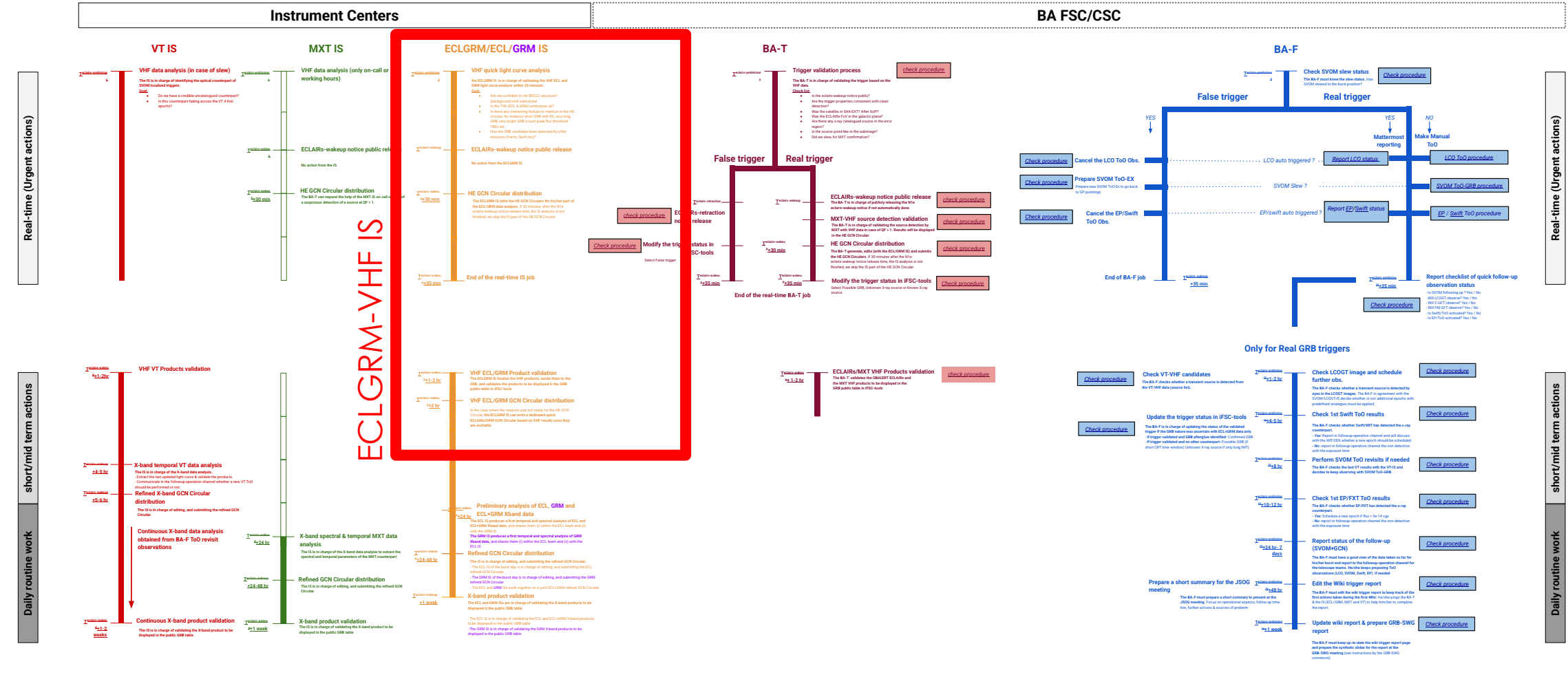


legend	useful links
Shifter only on-call	BA doc.: <a href="https://forge.in2p3.fr/projects/burst-advocates/wiki/Wiki">https://forge.in2p3.fr/projects/burst-advocates/wiki/Wiki</a>
Shifter only on duty 24h/7d	SSTOMP: <a href="https://sstomp.cnes.fr/sstomp/observation">https://sstomp.cnes.fr/sstomp/observation</a>
	Swift SVOM: <a href="https://www.swift.ac.uk/SVOM/">https://www.swift.ac.uk/SVOM/</a>
	EP/SVOM: <a href="https://ep.bao.ac.cn/ep/proposal_submit/user_proposal_list">https://ep.bao.ac.cn/ep/proposal_submit/user_proposal_list</a>
	LCO/SVOM: <a href="https://observed.lco.global/proposals/CON202058/1?role=client&amp;proposal=CON202058/1018&amp;limit=25">https://observed.lco.global/proposals/CON202058/1?role=client&amp;proposal=CON202058/1018&amp;limit=25</a>
	FSC: <a href="https://fsc.svom.org/home/">https://fsc.svom.org/home/</a>
	IFSC-tools: <a href="https://fsc.svom.org/ifsc-tools/home">https://fsc.svom.org/ifsc-tools/home</a>
	Notices & HE GCN: <a href="https://fsc.svom.org/alerts/">https://fsc.svom.org/alerts/</a>
	SUSS CSC: <a href="https://www.svom.cn/BA-F/#svomPage">https://www.svom.cn/BA-F/#svomPage</a>

# SVOM alert timeline (ECL trigger)

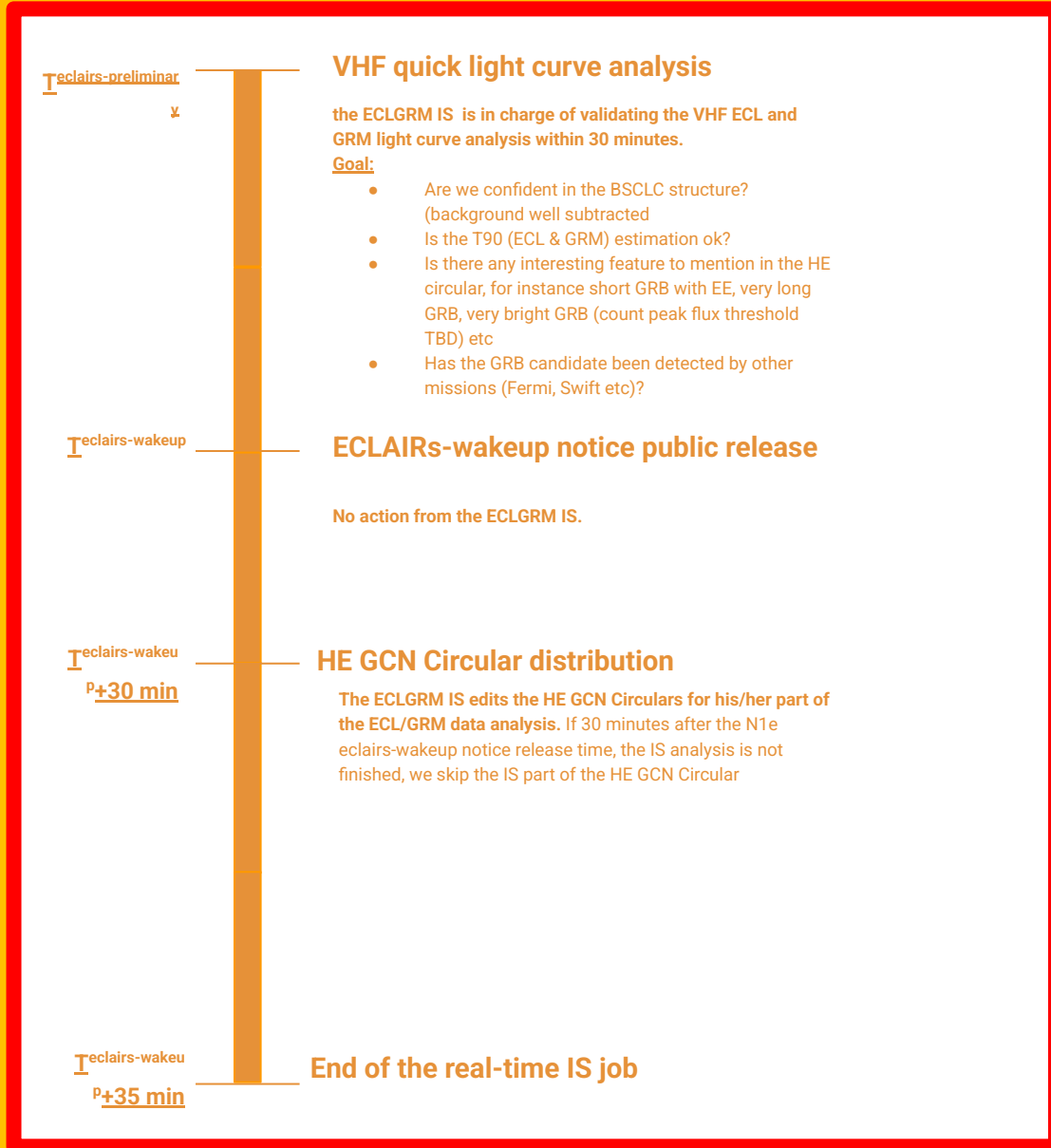
Flowchart prepared by Damien Turpin and already used for the BA-F and BA-T training sessions.

Flowchart of the SVOM scientific operation for the Core Program ECLAIRs triggers



legend		useful links	
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		FSC: <a href="https://fsc.svom.org/home/">https://fsc.svom.org/home/</a>	Swift SVOM: <a href="https://www.swift.ac.uk/SVOM/">https://www.swift.ac.uk/SVOM/</a>
		IFSC-tools: <a href="https://fsc.svom.org/ifsc-tools/home">https://fsc.svom.org/ifsc-tools/home</a>	EP/SVOM: <a href="https://ep.bao.ac.cn/ep/proposal_submit/user_proposal_list">https://ep.bao.ac.cn/ep/proposal_submit/user_proposal_list</a>
		Notices & HE GCN: <a href="https://fsc.svom.org/alerts/">https://fsc.svom.org/alerts/</a>	LCO/SVOM: <a href="https://observe.liv.global/proposals/CON202058/1?theme=client&amp;proposal=CON202058/1018&amp;limit=25">https://observe.liv.global/proposals/CON202058/1?theme=client&amp;proposal=CON202058/1018&amp;limit=25</a>
		SUSS CSC: <a href="https://www.svom.cn/BA-F/#svomPage">https://www.svom.cn/BA-F/#svomPage</a>	

# First 30 minutes following an ECL trigger

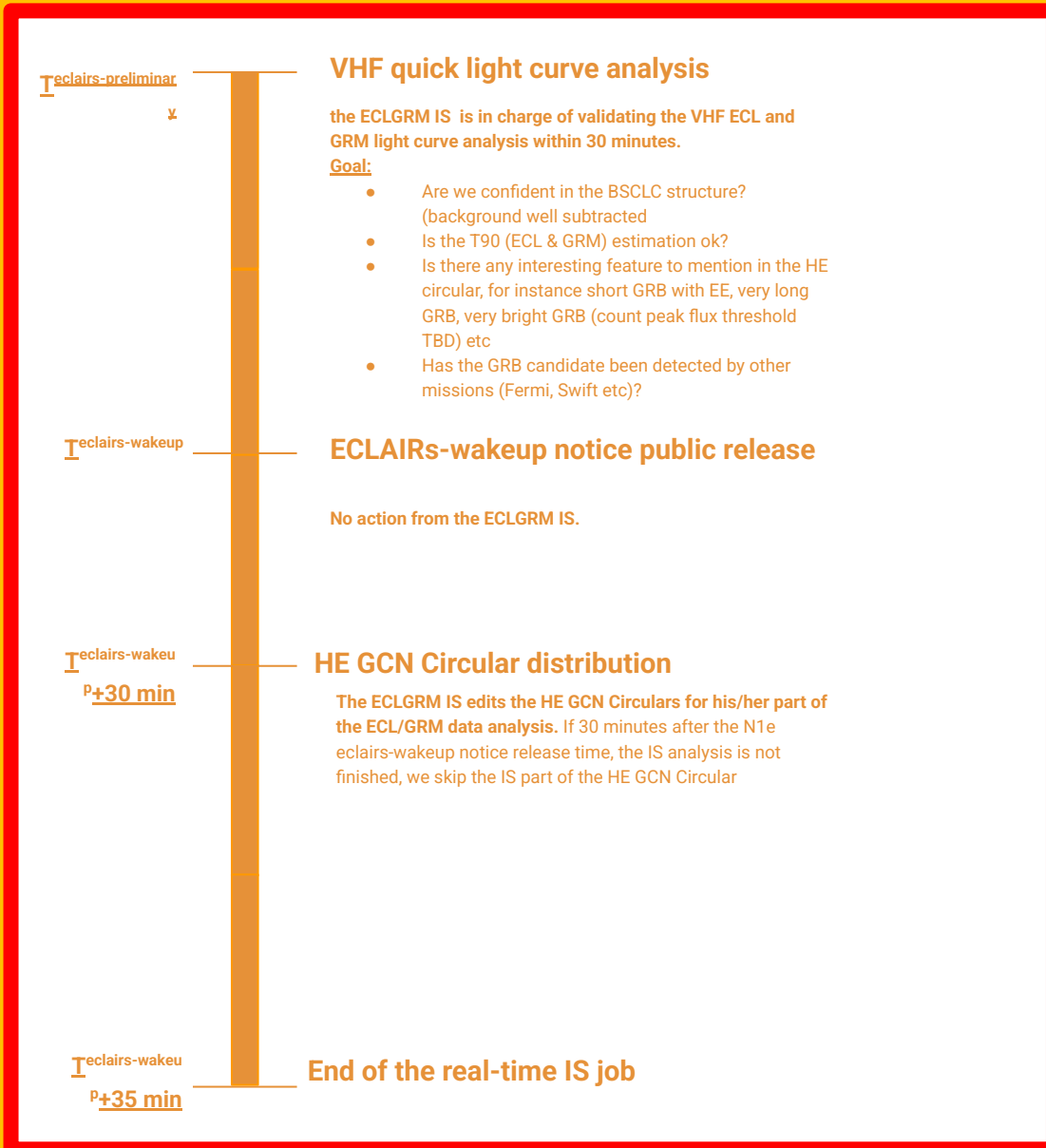


## Role of the IS ECLGRM-VHF:

- Check if the event is also detected by an other mission (e.g. Fermi/GBM).
- Validation of the ECL & GRM lightcurve quicklook analysis as soon as the corresponding VHF packets have been received.

The validation of the ECL & GRM VHF lightcurves must start as soon as possible, without waiting for the trigger validation by the BA-T.

# First 30 minutes following an ECL trigger



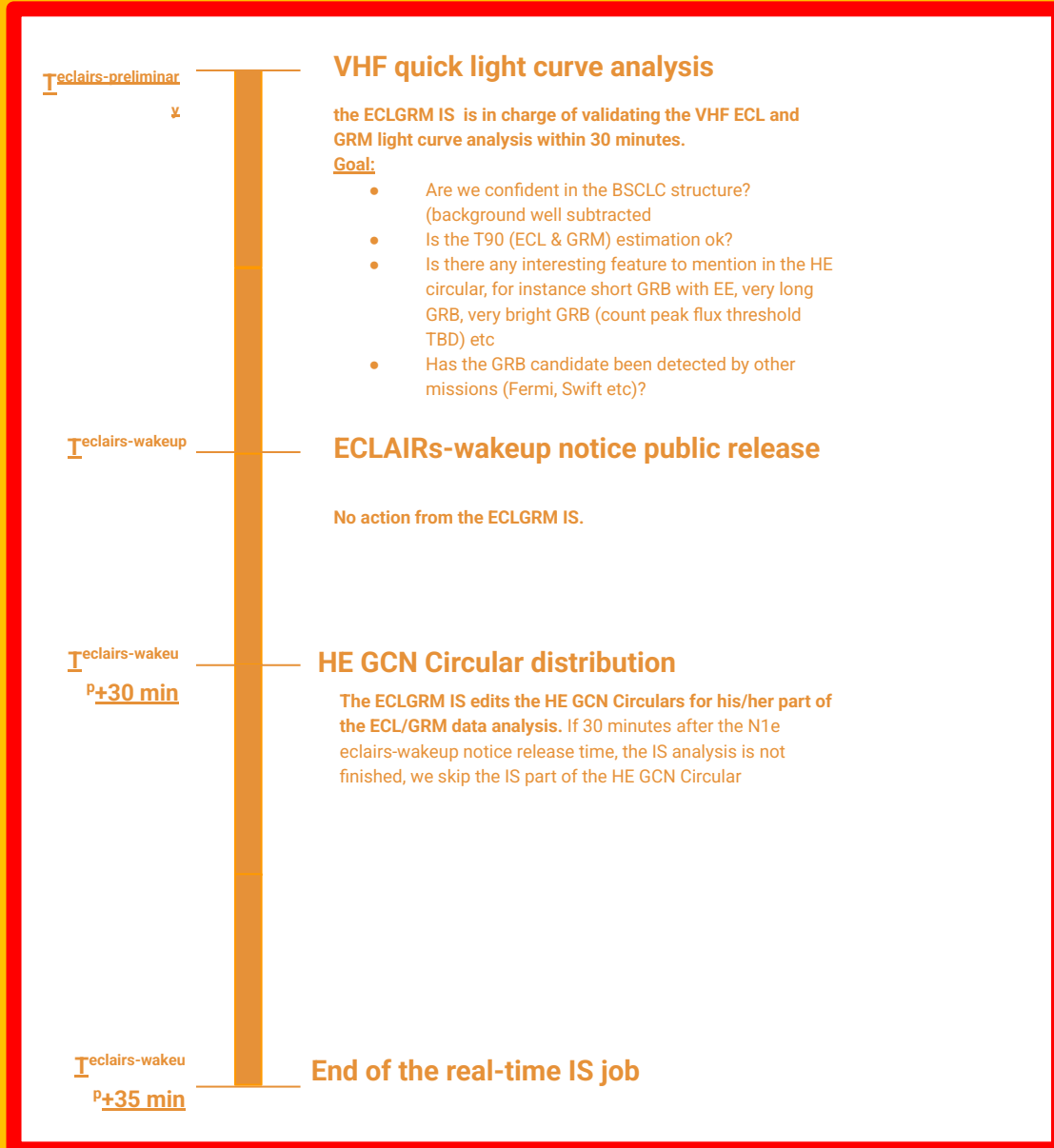
## Role of the IS ECLGRM-VHF:

*For trigger validated as « GRB candidates » by the BA-T:*

- **Extraction of any information useful to mention in the HE GCN Circular:** duration, specific features in the lightcurve. It is especially important to identify rare classes of events when possible (e.g. SGRB-EE).
- **Write the corresponding part of the HE GCN circular.**

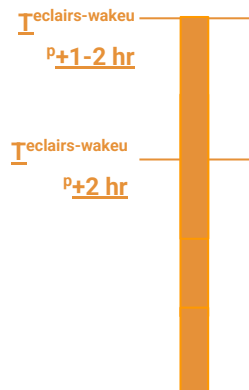
**During this phase: the BA-T and the IS ECLGRM-VHF share information and write the HE GCN circular.**

# First 30 minutes following an ECL trigger



- If the quicklook analysis is not completed within 30 minutes, the results are not included in the HE GCN circular.

# First 30 minutes following an ECL trigger



## VHF ECL/GRM Product validation

The ECLGRM IS finalize the VHF products, sends them to the SDB, and validates the products to be displayed in the GRB public table in iFSC-tools

## VHF ECL/GRM GCN Circular distribution

In the case where the analysis was not ready for the HE GCN Circular, the ECLGRM IS can write a dedicated quick ECLAIRS/GRM GCN Circular based on VHF results once they are available.

- If interesting information (on the duration and/or time structure ) could not be included in the HE GCN circular but is obtained in the following 2 hours, a second circular can be written and sent by the IS ECLGRM-VHF.
- In all cases, once the quicklook analysis is completed, the IS ECLGRM-VHF must inject in SDB and validate all the science products that meet the expected quality requirements, so that they can become public on the SVOM GRB Table.

# The role of the ECLGRM-VHF IS



**This procedure must ensure consistency between the information contained in the HE GCN circular and made public in the SVOM GRB Table.**

# SVOM alert timeline (GRM-only)



In the case of a GRM-only trigger, the role of the IS ECLGRM-VHF is slightly different:

- **Check if the event is also detected by an other mission (e.g. Fermi/GBM).**
- **Validation of the ECL & GRM lightcurve quicklook analysis** as soon as the corresponding VHF packets have been received.
- **Validate if possible the trigger and report astrophysical events.**
- **For GRB candidates, inject in SDB and validate all the science products that meet the expected quality requirements, so that they can become public on the SVOM GRB Table if the trigger validation as a GRB candidate is confirmed.**

# SVOM alert timeline (GRM-only)



- When a GRM-only GRB is not detected by an other mission, the final trigger validation is made by the IS GRM at IHEP, using X-band data. It is only at that stage that the validated scientific products become public on the SVOM GRB Table.
- **The HE GCN circular for GRM-only GRBs is written and sent by the IS GRM, and gives directly the results of the refined analysis using X-band data. The IS ECLGRM co-authors the circular and is in charge of providing the information for ECLAIRs: Xon/Xoff? Outside field of view?**

# SVOM alert timeline (GRM-only)



- In general, speed is less important for GRM-only GRBs, as they are not localized.
- However there may be exception: in the case of a GRM-only GRB rapidly localized by another mission, it is important to inform the BA-F as soon as possible to trigger a SVOM ToO if possible.
- This is especially important for rare classes of GRBs (e.g. SGRB, SGRB-EE) or for a detection in a rare spectral range (e.g. detection and localization by Fermi/LAT).

# Summary

The role of the IS ECLGRM-VHF is:

- **to validate as soon as possible the scientific products generated by the quicklook analysis of ECLAIRs and GRM data received by the VHF network.**
- **to make the validated scientific products public, in the HE GCN circular and on the SVOM GRB Table.**

 **The purpose of this training is now to detail this timeline by presenting each task and the associated tools, and then putting them into practice.**

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 **The purpose of this training is now to detail this timeline by presenting each task and the associated tools, and then putting them into practice.**

**The goal is to provide important information in near-real time on the GRBs detected by SVOM for observers involved in the follow-up (within/outside SVOM) and for shifters in other GRB missions (e.g. Fermi).**

 **This will be commented in the next presentation by Grazia Bernardini.**