



## Cherenkov Telescope Array Observatory

### SST Engineering Review – DMA Disposition

CTA-INS-SST-305000-0001

Prepared and Approved by Organization and Role	Signature and Date
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Giovanni Pareschi (INAF) Chair, ad interim SST ESC	  Milano, 2 November 2020
Stefan Funk (Univ. of Erlangen) Vice-Chair, ad interim SST ESC	 Erlangen, November 2nd, 2020
Released by Organization and Role	Signature and Date
Federico Ferrini (CTAO) Managing Director	 Bologna, November 2, 2020

## 1 Background

According to Council Resolution C17.20 (17 June 2019) in [RD01], the final step of the SST harmonisation process has been the Design and Value Engineering Review (DVER). The scope of the review was to assess the current prototypes designs of the SST structure and camera with the aim of (a) further industrialization and (b) further optimization for cost and maintenance.

The review was kicked off on 10 June 2020 with the review meeting held on 20 & 21 July 2020. Following the “SST Engineering Review Plan” [RD02], the review was conducted by an international team of external experts and an external review chair. The CTA-SST Engineering Review Panel Report [RD03] was released on 3 September 2020 and contains 9 recommendations and 37 actions items.

The Decision-Making Authority (DMA) for this was specified in [RD03] to be the CTA Project Manager and the Chair and Vice-Chair of the ad interim SST Executing Steering Committee. The present document states the disposition of the DMA on the panel recommendations and action items.

### 1.1 Reference Documents

Ref.Doc	Document Title	Document Number
RD01	List of Resolutions taken during the 17th Council meeting of the Cherenkov Telescope Array Observatory gGmbH (Amended)	Council document no63-2019
RD02	SST Engineering Review Plan	CTA-PLA-SST-305000-0001
RD03	CTA-SST Engineering Review Panel Report	CTA-RER-SST-305000-0001_2a

### 1.2 Definition of Terms and Abbreviations

Term/Abbreviation	Definition
DMA	Decision-Making Authority
RIX	Review Item Discrepancy, Question or Comment
SST	Small-Sized Telescope
SST-CAM	SST Camera (a sub-project of the SST programme)
SST ESC	SST Executive Steering Committee
SST-STR	SST Structure (a sub-project of the SST programme)

## 2 Panel Conclusion and Project Phases

The panel conclusion and overall evaluation ([RD03], Section 9) is as follows:

*The panel acquired the conviction that the SST project is on a good path. The overall design is mature, sound and solid with good design and performances margins. The project is now at a point when it is necessary to consolidate and optimize it (design, management, AIV ). There is time for this if the decisions on the proposed AI & REC are not delayed.*

*As showed in the recommendations, different actions may be taken in order to optimize costs and workload. The careful trade of production costs against on site AIV, test, operations and maintenance is definitely an important aspect, with the number of telescopes being a key parameter.*

*Building on that, with a strong managerial structure, the project may be developed successfully with a management by costs and schedule.*

After the closure of the SST engineering review, a bridging phase will begin. This bridging phase will start by a bridging phase Kick-Off (BKO) and end by a proposed design review (PDR). Then the programme will enter its Design Consolidation Phase (DCP) for which system critical design review (CDR) is a major milestone prior to start production.

## 3 DMA Disposition

The DMA for the SST Engineering Review is very grateful to the review panel for the high-quality panel report, with very relevant advice, recommendations and action items.

**The DMA decides to accept the content of all recommendations and action items of the SST Engineering Review Panel as given in [RD03]. Just a few deviations, as specified below, need to be foreseen regarding the implementation responsibility, schedule and timeline for a few Action Items.**

Regarding Action Item SST-ER-27

*Timing/White Rabbit implementation: Implement in the design a common timing board for the different CTA cameras, to enhance knowledge and serviceability (<PDR)*

the DMA remarks the following:

This action cannot be adopted as worded, as it is not a direct responsibility of the SST Camera Project to provide a common timing solution for other cameras. When such a common timing solution will be provided by CTAO, then the SST Camera Project will endeavour to integrate this into the camera design. Of course, if this is provided by CTAO in time, it will be possible to complete the action before the PDR.

Regarding the following actions (all relevant for the SST-STR)

SST-ER-21 (ref RIX #40681)  
SST-ER-23 (ref RIX #40688)  
SST-ER-28 (ref RIX #40701)  
SST-ER-29 (ref RIX #40701)  
SST-ER-33 (ref RIX #40591, #40702)

the involvement of industrial partners for implementing the action and bringing it to closure will be needed. Therefore, the close-out timeline will be shifted from the suggested < BKO to < PDR, in order to guarantee a sufficient margin for the activation of a specific contract and industrial activities.