

# SST - CAM

## THE SST CAMERA IN THE PREP. PHASE

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Disclaimer: the views portrayed here in no way reflect the “corporate” CTA position, and may be subject to substantial changes (and bribery)

# SST-CAM

What was written...

- Design and prototyping of the SST camera.
- Focal plane optics, **photosensors**, **readout**, **control** and **monitoring electronics**, and **mechanical support** and **cooling systems**.
- 170 person months over 3 years, or 19 people working nearly a full week every month for 3 years.

What was written may not be 100% relevant anymore... especially timescales.

# Prep. Phase Words

...and what they mean

System: CTA

Sub-System: SST

Assembly: SST Camera

Component: Photosensor, Preamp, FE Electronics....

Validation: “Are you building the right thing?”

Verification: “Are you building the thing right?”

Cost Analysis: How much does it cost? Are there price breaks for large quantities? etc.

Risk Analysis: The effect of uncertainty on objectives, whether positive or negative.

# SST-SYS Deliverables

## Implications for SST-CAM

- **Task I Integration of SST sub-system designs (T to T+12)**
  - SST-CAM to provide design report on both options DC and SO by T+10 to SST-SYS:
    - Costing
    - Risk assessments.
    - Suggested validation and verification schemes
  - SST-SYS will integrate these reports into two design proposals, ready for review.
  - SST-SYS will then organise a review together with TPC-INT to reach a proposal for the choice of option (at T+11).
  - SST-SYS will then deliver a SST Baseline Design Document (BDD) on the successful option (by T+12):
    - Baseline technical design
    - Costings
    - Risk analysis / assessments
    - Validation and verification procedures for prototyping

# SST-SYS Deliverables

## Implications for SST-CAM

- **Task 2 Coordination of SST prototyping (T+12 to T+36)**
  - SST-SYS will oversee development from components to assemblies.
  - SST-SYS will identify critical assemblies to prototype based BDD.
  - SST-CAM and STR will then implement these prototypes.
  - Each component and assembly must be suitably qualified and assessed according to the validation and verification schemes from Task 1.
  - Failures feed back to changes in the BDD via Task 3.
  - SST-SYS will compile the results into a report on component testing, verification and qualification for the SST (QD) (T+30).
  - SST-SYS + PROC will handle links with industry.
  - SST-SYS will work with ATAC to ensure the design of an optimal calibration for the SST sub-system.
  - CAM and SYS will integrate the prototype assemblies into a telescope.

# SST-SYS Deliverables

## Implications for SST-CAM

- **Task 3 SST Configuration Management (T+12 to T+36)**
  - Ensure that changes to the BDD during Task 2 undergo proper verification, validation, risk and cost analysis.
  - Maintain and update cost model.
  - SST-SYS will communicate with MC to ensure that impact of changes is properly assessed.
  - SST-SYS will extend the verification and validation procedures to the full SST prototype.
  - BDD updates to the Technical Design Document for the SST (T+23).
  - TDD + changes + verification, validation, cost and risks assessments for full SST leads to the Final Design Document for the SST (T+34).

# SST-SYS Deliverables

## Implications for SST-CAM

- **Task 3 SST Configuration Management (T+12 to T+36)**

- Ensure that changes to the BDD during Task 2 undergo proper verification, validation, risk and cost analysis.
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- SST-SYS will extend the verification and validation procedures to the full SST prototype.
- BDD updates to the Technical Design Document for the SST (T+23).
- BDD + changes + verification, validation, cost and risks assessments for full SST leads to the final Design Document for the SST (T+34).

Means that SST-CAM will be asked to document testing procedures in certain way

SST-CAM under constant consultation

# SST-SYS Deliverables

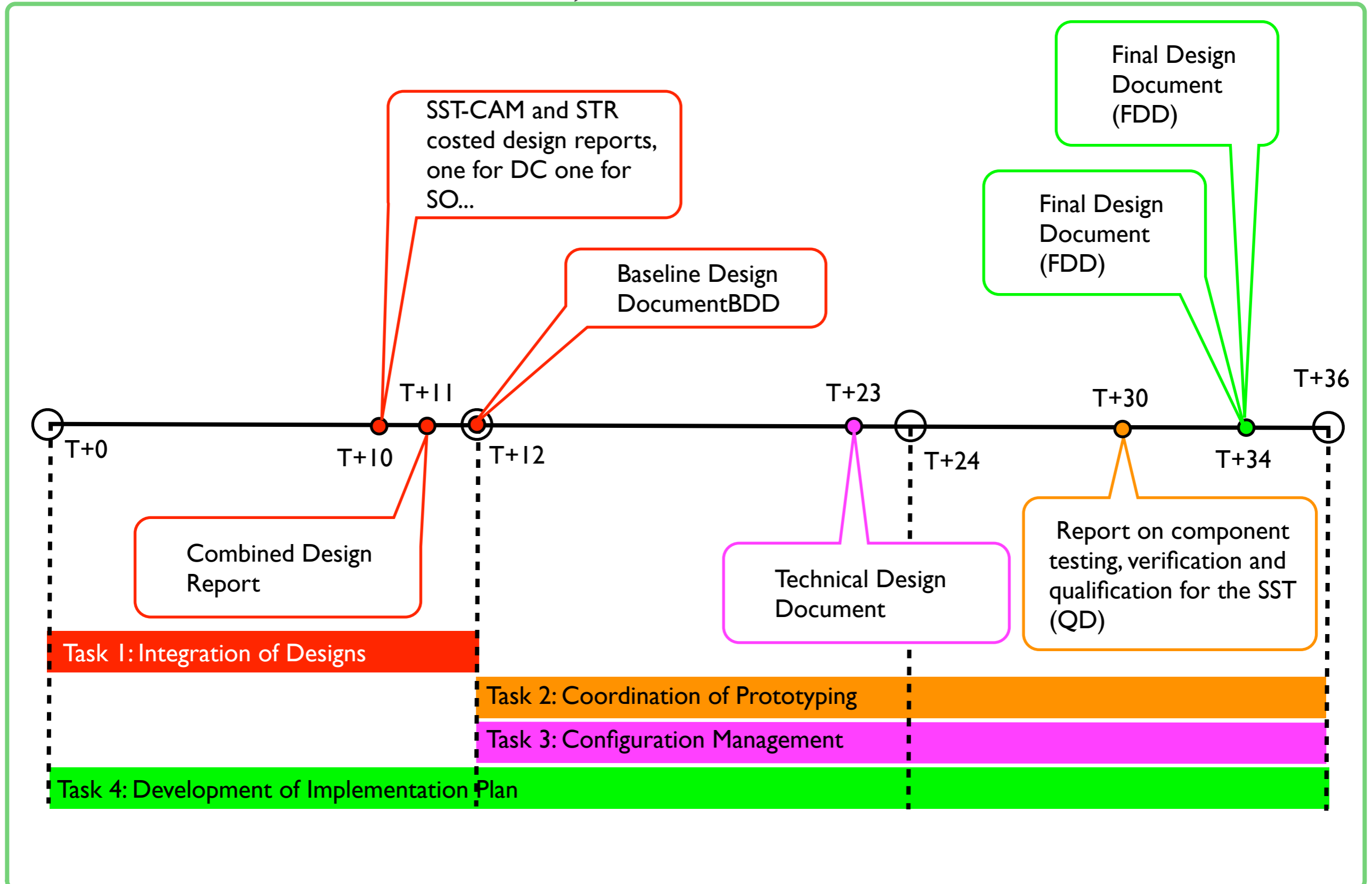
## Implications for SST-CAM

- **Task 4 Development of SST Implementation Plan (T to T+36)**
  - SST-SYS to develop a plan on how to implement the SST part of the array during the construction and operation phase (T+34).
  - Safety and risk mitigation included in this task.



# Timeline

What do we have to do, and when?



# Philosophy

## How to approach development of the SST camera?

- We should not “push” our own designs.
- We should understand what we need and why.
- We should get our hands dirty.
- We should not reinvent the wheel.
- We should work together and utilise common resources.
- We should keep it simple.

# Immediate Actions

## What is crucial?

- Communications
  - Wiki, email, phone calls, meetings
- Specification / Requirements
  - Build on the FPI and ELEC specs
  - Include initial “target” costs
  - Move away from the “table”
  - Each point should be qualified and justified:
    - Lower limit, upper limit
    - How crucial is this parameter to be met
    - Where do the limits come from
    - What is the consequence of this limit slipping?
- Inclusion
  - EG: FE ELEC projects
  - All SST designs considered
- Identification of crucial work:
  - What needs MC, and who will do it?
  - Which components need testing / prototyping, and who will do it?
- Costs
  - Start collecting and adding to the specification.
  - Feedback to MC etc, if things change drastically from initial estimate.
- Establish targets
  - EG, spec by December?

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