Reminder: what is the SAT?

38 FTEyr for

- CTAO releases based on :
  - Gammapy releases
  - Adjusted documentation (tutorials, legal content, licence, etc)
  - Additional material (TBD)
  - Interfaces for automated analyses (RTA: CAT-A analysis, batch: Cat-B/C)
- SUSS AIV
- SDC (in best effort)
- 2yr warranty for bug fixing (to be more defined)

Support for other SUSS IKC

- Science Data Preparation and Quality Monitoring (not started)
- Proposal Handling System

Does not include

- Early science, user support, science operation support

The IKC team

- **France** (15 FTEy): IN2P3 (APC-leading, LPNHE, LUPM, LP2IB), INSU (LUX, AIM)
- **Germany** (15 FTEy): MPIK-leading, ECAP, DESY-Zeuthen
- **Spain** (3 FTEy): UCM, IAA/CSIC
- **Italy** (5 FTEy): INAF

- Where we stand relative to the 38 FTEyr ?
  - France: >15 – Germany: ~15 – Spain: >3 – Italy: <5

The SAT IKC

Preparatory meetings

- 12/20/2022 (JH, BK, MF, CP, Stefan F.)
- 2023/04/27-29 (BK, RT, RZ, MF, KK): Science analysis UCs, SDC
- 2024/03/11-14 (RT, BK, RZ, MF): Requirements
- 2024/05/07 (IKC team: BK, RT, AD, MF, CB, CvE, DM, FP, J-L.C., MLG, QR, MC,RLC, Stefan F.): organisation
- 2025/05/06: SAT
- 2025/05/28: IKC release

Release plan and milestones

Release	Date	Scope	Intended use	Expected Outcome	Linked Gammapy release	Linked Data release	Linked DL3 Data formats
Release 0: Proof of Concept	Q3 2025 (Sep 30)	Setup and test the release process Establish process for verification of SAT requirements and science analysis use cases	Internal milestone to setup the release process (CTAO Computing)	Release process is defined SAT can be installed from the CTAO repository	Gammapy v2.0 (expected in Summer 25)	Internal test data sets - from Gammapy - From LST (?) - From internal SDC (?) - From ACADA SAG (?) All with different data formats	GADF (currently supported)
Release 1: Readiness for Open SDC Preparation and Early Telescope Operation	Q1 2026 (Jan 31)	Allow DL3 simulations for open SDC Allow science verification and commissioning of early telescope data Produce documentation for PDR (design documentation, requirements and science analysis use case verification, data models, data formats, release process, etc.) Establish SAT benchmarks	Used for SDC preparations (DL3 simulations), science verification and commissioning of early telescope data (CTAO Computing, CTAO PS and SDC, CTAO IKCs, CTAO Science Collaboration) Q: is this release intended to be used in the automated analysis (category A (ACADA-SAG))?	SAT can be used for open SDC and early telescope data Documentation for PDR Benchmarks	Gammapy v2.1	Benchmark data sets (curated by SAT team) Open SDC data sets (produced with this SAT version) DPPS-produced DL3 from early telescope data (LST) ACADA-SAG DL3 All with same data format	GADF + CTAO metadata + mapping to ObsCore Karl and Max will document the DL3 data format until the end of this year (Q4 2025)
Release 2: Readiness for Open SDC and CTAO Science	Q3 2026 (Sep 30)	Full functionality for SDC and CTAO science Produce documentation for CDR Produce documentation for CTAO users User Validation / Science Validation	Used for SDC analysis, science verification and commissioning of early telescope data, Used by public CTAO users for science publications (Public) Q: is this release intended to be used in the automated analysis (category A (ACADA-SAG), category B/C (SUSS-SDP))?	Production-ready SAT with completed documentation Documentation for CDR Validation reports	Gammapy v2.2	Benchmark data sets (curated by SAT team) Open SDC data sets (produced with this SAT version) DPPS-produced DL3 from early telescope data (LST) ACADA-SAG DL3 All with same data format	VODF? + mapping to ObsCore
Release 3: Updated Public SAT	Q3 2027 (Sep 30)	Update and complete, with feedback from usage of R2 Produce documentation for (final) ACRV Integration with Science Archive	Used by public CTAO users for early science data (Public)	Production-ready SAT with updated documentation and updated functionality with feedback from usage of R2 included Search and download data from CTAO Science Archive	Gammapy v3.0 / v2.3 (concept of long-term support versions need to be revised)	Benchmark data sets (curated by SAT team) DPPS-produced DL3 for early science (LST, MST, SST) ACADA-SAG DL3 All with same data format	VODF? + mapping to ObsCore

Release plan analysis

Context

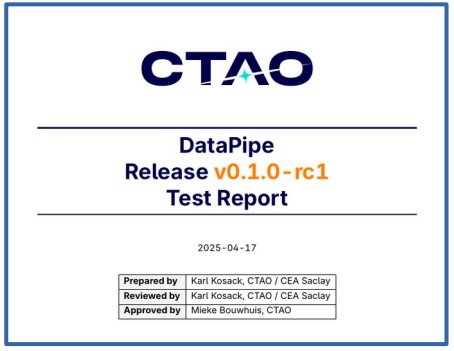
- We are already above the SAT cost12/20/2022 (JH, BK, MF, CP, Stefan F.)
- Funding (human resources) are going to their end (~2016)

A proposal of what would be useful

- Alignment the release plan with the IKC review process
  - Release 1 (SDC simulation) in Q1 2026 : Technical Design Review
  - Release 2 (SDC release) in Q3 2026 : Critical Design Review
  - Release 3 (Early Science) in Q3 2027 : Acceptance Review
- Given the long ERIC processes, initiate the building of a plan for the *maintenance and upgrade of the SAT*
  - Otherwise, all user feedbacks of the early science phase will stay w/o answer during a long time

SAT: Current status

- Level-B requirements: real progress achieved, but *still a lot to do*
- Science Analysis Use Cases: main elements settled (SDC), but documentation to be done
  - Level A: Roberta; Level B: Matthias; Level C: us
- SAT features: RT made a full list
- SAT w.r.t Science Operations:
  - Background Model, Exclusion Regions, Catalogue and Diffuse Emission model → CTAO
  - Risk of growing ‘requirements’ while the SAT cost is fixed and manpower limited
- Documentation
  - User: tutorial and API enough? So many non-experts are in fact expecting in addition a TeV analysis handbook → out-of-scope of the IKC
  - *Project Reviews:* See next slides
- *DevOps, Benchmark, V&V* (Verification & Validation): TBD
  - Daniel Morcuende has starting the work on GitLab: see the CTAO SAT GitLab
  - Re-use as much as possible the DPPS machinery
  - A team should be set-up: Italy + France +CTAO?


CTAO

DataPipe
Release v0.1.0-rc1
Test Report

2025-04-17

Prepared by	Karl Kosack, CTAO / CEA Saclay
Reviewed by	Karl Kosack, CTAO / CEA Saclay
Approved by	Mieke Bouwhuis, CTAO

Open questions

- When CTAO will be ready for VODF? [event types and DPPS…]
  - γπ: restructuring of our I/O scheme and metadata scheme
- Systematics handling? Nobody (CTAO, γπ) is working on that
- VO handling
  - APC has a funding for that + IVOA HEIG → under-way
- Reproducibility
  - Associated to the Provenance, HLI – need to start the project
- HLI
  - γπ: restructuring under the responsibility of MPIK
- Models
  - Needs of CTAO not precised – γπ: MWL (FA) + astrophysical model (MC) projects
- Catalog functionnalities → TBD
- Simulations → are we good?
- After the acceptance: what is the s/w maintenance and upgrade agreement?

Next steps

Next IKC meeting in ~2 weeks

- Discuss about these information
- Elaborate a strategic plan
- Share of tasks and optimisation of the resources

Feedback from the dev teams

- Elaborate a detailed dev plan
  - Without forgetting our own projects (MWL&MM, jit, DevOps, etc)