

Every photon kept. Every change verified.

APAS turns a fleet's nightly smart-telescope captures into a finish-ready image — unattended, across scopes and machines, with each step driven by measurements of the actual data.

Measure, don't guess

Stretch strength, linearity, star sharpness and color are measured on each image — not assumed from a file type or assigned from a catalog label.

Nothing overwritten

Every stage writes a new, numbered version with its provenance recorded, so any result can be traced to its inputs and settings — and the previous one is always still there.

ONE COMMAND, SCOPE IMAGES TO FINISH-READY

Acquire

Harvest

Combine

Gradient

Deconvolve

Stretch

Finish

Deconvolution runs only on images measured to be linear — each file is checked, never assumed — so AI sharpening is applied only where it is physically valid.

Combining what every scope captured

Counted once

Cumulative-save rule

A scope's live stack keeps growing across nights, so each save already contains the earlier ones. APAS keeps exactly one — the deepest — per scope unit, so no photon is counted twice.

Finest grid

Cross-scope combine

Images from different scopes and units are registered onto the grid of the finest plate scale in the set, so the sharpest instrument sets the resolution of the result.

Sharpest first

Quality-weighted, outlier-rejected

Each frame is weighted by measured star sharpness, and satellite trails and other outliers are rejected pixel by pixel before the frames are combined.

One tray

Cosmos-ready deliverables

Every target ends as a single current, finish-ready file in one tray, with a manifest and its own finishing guide — no hunting through versions.

Checked first

Integrity guards

Raw data is verified by size and header before a scope is ever cleared, and a transfer that did not complete is reported, never silently accepted.

Fleet-wide

Parallel across machines

Scopes are pulled and targets processed across a fleet of Macs, with each machine's role, drives and health tracked in one registry.

The stretch learns. The finish explains itself.

Finishing is where most of an image's character is decided — and where most hand-tuning usually happens. APAS measures each image, applies settings it has learned from past results, and writes down what it did.

Self-tuning auto-stretch

Background and dynamic range are measured on each linear image and mapped to a stretch by a model that learns from every run. Human choices count more than its own, and built-in limits keep it from drifting.

Dual-band color recovery

H α /OIII captures are detected automatically and rendered in a bicolor palette that preserves the line ratio carrying the color, then selectively saturated so the nebula stands out from the sky.

Learned finishing

Tone-mapping settings are learned per object from side-by-side comparisons; new targets inherit their class's settings. Each image also gets its own finishing guide, generated from how it was processed.

Automation that reports, never hides

Every step checks what it produced. A step that cannot do its job — a missing tool, a file that did not land, an input that fails a measurement — says so plainly and stops that target, instead of passing along something that only looks finished.

Runs leave a full transcript and a plan sheet, and a target that fails does not stop the rest of an overnight queue. What is left for a person is the subjective call: which rendering looks best.

- **Provenance** recorded on every output
- **Versioned** — nothing is overwritten
- **Idempotent** — any step is safe to re-run
- **Best-of curation** with contact sheet
- **Sensor-aware** nightly imaging calendar
- **Offsite backup** with verified copies