

Scalable Panel Assembly (SPA)

Calibration software for CAVEs and panel-based displays



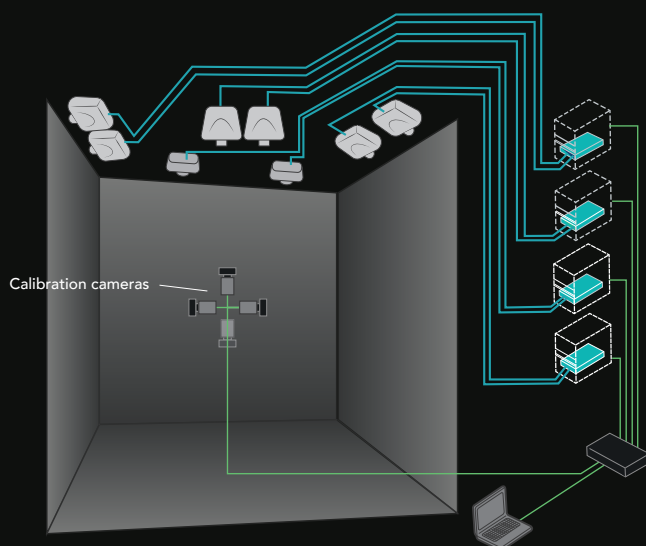
- Purpose-built for CAVEs, faceted screens, and multi-panel systems
- Mix edge-butt and edge-blended projection in a single display
- Automatic camera-based and manual alignment in one tool
- Recalibrate in minutes, not days



Scalable Panel Assembly (SPA) is calibration software designed specifically for panel-based displays: CAVEs, faceted simulators, articulated screens, and any system built from discrete flat surfaces that must behave as one continuous display. SPA carries forward the core calibration engine and playback interoperability of Scalable Display Manager, adding unique capabilities to handle polygonal flat panels, hard corners and the ability to freely mix edge-butt and edge-blended projection within a single calibrated system.

SPA is primarily used in R&D and visualization applications. Aerospace R&D, AR/VR and research facilities running CAVEs and faceted immersive rooms that historically demanded specialist labor to keep aligned. SPA replaces that maintenance burden with camera-based automatic calibration, supplemented by full manual controls for facilities that want fine-grained adjustment. A display that once required a day of expert alignment recovers in minutes, which means the facility spends its time on research, not upkeep.

Where SDM is optimized for continuous curved surfaces, SPA is optimized for the discontinuous ones: the seams, corners, and facets where flat panels meet. That specialization is what makes the product.



Warping hardware and playback devices across the professional AV landscape and direct projector upload.

(*) SPA supports no more than 1 camera per panel

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Capabilities

- **Any polygonal flat screen.** Arbitrary panel counts, sizes, and orientations — walls, floors, ceilings, and angled facets.
- **Edge-butt + edge-blended in one system.** Combine abutting panels with hard seams and overlapping projectors with software blends in the same calibration with a simple to use interface.
- **Automatic and manual alignment.** Camera-based calibration for speed and repeatability; manual correction tools for ensuring per pixel continuity between tangential surfaces.
- **Single- and multi-projector facets.** Drive each panel with one projector or tile several across a large facet.
- **Projector agnostic.** Compatible with all makes and models of projectors — no vendor lock-in on the display hardware.
- **Front & Rear Projection.** Supports either front or rear projection, with no specialization and allows users to mix the two without added setup complexity.
- **SDM interoperability.** SPA shares the Scalable calibration architecture and output formats, so panel-based systems plug into the same downstream rendering and playback pipelines.
- **Low-cost maintenance.** Recalibration is a routine, minutes-long operation rather than a scheduled service event, cutting the recurring cost of owning a CAVE.

Use Cases

- CAVE and multi-faceted immersive environments
- Universities and National Laboratories
- AR/VR and human-factors R&D
- Automotive, aerospace, and industrial design review
- Faceted WASP/DART simulators
- Experiential and interactive touch displays

