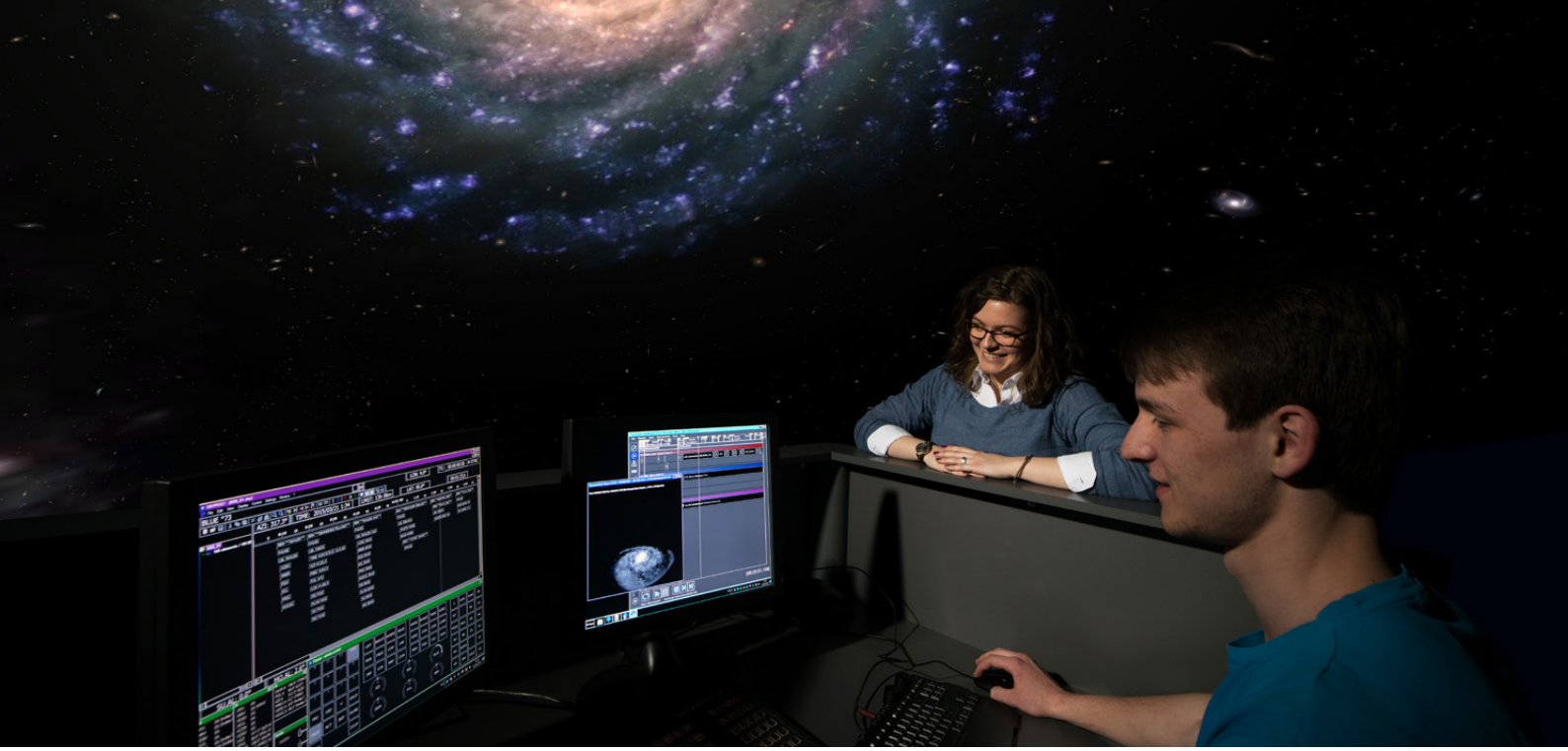
Reach for the stars… and beyond

ZEISS powerdome® IV

Hybrid control for brilliant stars and perfect projection

From the Earth’s sky to the boundaries of the universe



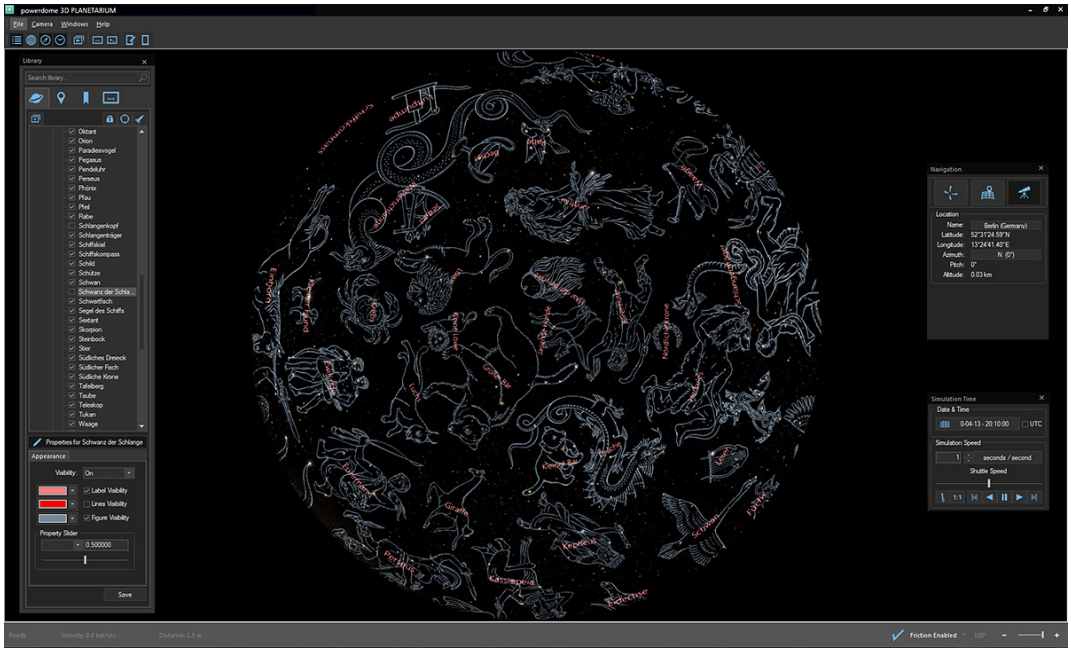
The planetarium for brilliant stars and perfect projection

The new powerdome version IV holds surprises in store: new functions, improved performance and enhanced imaging quality. The software integrates the 2D planetarium for Earth-bound astronomy and the new 3D planetarium for three-dimensional journeys from the Earth to the boundaries of the observable cosmos, using the most up-to-date astronomical databases.

The star projector and the digital planetarium are precisely synchronized – for seamless transitions and joint projection (true hybrid).

With powerdome IV you can avail yourselves of stereo projection, 8k performance, and a bit depth extended to 10 bits per RGB color channel – for stepless gradients at frame rates of up to 120 fps (stereo). Thanks to the new, exceptionally efficient HEVC codec, compression artefacts in fulldome videos are things of the past, plus you gain free memory space.

With the telescope function you make all Messier objects and many more deep-sky objects accessible to your audiences. Show them polar lights, comets and shooting stars in all their varied splendor.



Constellation figures and constellation names in the 3D Planetarium

Flexibility – from the Editor up to live streaming

The 3D Planetarium

Demonstrate fundamentals of astronomy, astrophysical facts, geosciences and a host of other scientific relationships in lucid 3D presentation.

- Interactive three-dimensional visualization and simulation of astronomical databases in real time
- Presentation facilities ranging from a detailed model of the International Space Station (ISS) to our native planet, to the solar system and the Milky Way to the cosmic background radiation
- Labels, grids, axes of rotation and many more didactic functions
- Graphic user interface for dead-easy interactive simulations
- Simulation of time and place, allowing for object motions with time
- Control in synchronicity with the star projector

The 2D Planetarium

Viewing the sky as seen from the Earth is, and will remain, the most significant presentation in any planetarium, whether with or without a star projector.
The 2D planetarium of powerdome IV comprises all the classical functions in a synchronous combination of analog and digital projection:

- All coordinate systems and lines, overlays of all 88 constellations – as pictures, line patterns or IAU boundaries
- Sun, Moon, planets – classical and digital projections with zoom, phases and trails
- Didactic aids: Martian loops, the Sun's analemma, circumpolar circle, the daily arcs of the Sun, etc. etc.
- Telescope-style magnification of all Messier and deep-sky objects
- Atmospheric real-time effects: Clouds, rain, mist, snow, rainbow, polar lights, shooting stars

The user interface

Operation remains very easy, indeed: Click or tap on the buttons (tiles) of the control interface to start individual functions or call a sequence of commands – no matter whether for planetarium functions or external (e.g., illumination) systems.

- A common interface for all system components
- Web-browser-based for all kinds of terminals
- Mobile, cordless placement
- Handling with the ease of child's play
- Flexible adaptation to individual requirements and likings
- Clearly structured default settings of all important functions
- Live operation of all planetarium and device functions
- Active feedback and status information

The proven panel with its keys and control knobs excellently interacts with powerdome IV – ideal for all classical planetarium functions as well as for controlling digital functions.

Editor

The powerdome Show Manager offers the most extensive range of functions for editing shows and animating show elements.

powerdome tools

- Video encoder with HEVC codec and 10-bit color depth per color channel
- Show Renderer (generation of dome masters)
- Live streaming of external sources
- Remote service for fast aid
- Plug-ins for special functions

powerdome IV

powerdome IV control interface	
Web pages & tiles:	Any number, free naming, links, personalizing option, subject grouping, editing functions, player functions, variable display size, free layout of pictures and text, free assignment of control commands and sequences for live operation, picture upload, feedback, sequential control, search functions
Standard pages:	Predefined pages and tiles for frequently used functions, astronomical sequences and elements of the powerdome Library
powerdome Show Manager (editor)	
Editing tools:	Timeline with layers and tracks, chapters, preview, animation editor, gamma correction, parameter setting, positioning aids, definition and selection of presettings, default times, resources management, activation/deactivation of layers and tracks, device commands
Animation editor:	Extended editing tools, setting of predefined animations, separate activation/deactivation of indiviual properties in an animation, definition of standard animations, export und import of presettings
Plug-ins and tools:	Automatic Slide Show Creator, automatic Picture Gallery, Show Exporter (exchange of show productions), Live Stream (streaming of external contents), Show Renderer (generation of dome masters from a show)
Fulldome video	
Resolution / frame rate:	1k up to 8k / 24 up to 60 fps (stereo: 120 fps)
Color rendition:	8 bit per RGB color channel (standard), 10 bit per RGB color channel (HEVC codec) for optimized color gradients
Encoder:	Generation of powerdome video data; codecs: MPEG 2, H.264, H.265 (HEVC)
Slicing:	In real time, no pre-slicing required
3D Planetarium	
True Hybrid:	Synchronous control with star projector, harmonic transition between analog and digital skies
Objects:	Planets, moons, satellites, dwarf planets, asteroids, stars, interstellar objects, the Milky Way, galaxies, galaxy clusters, sky surveys, labels, grids, axes of rotation, etc. (visualization of astronomical databases)
Control:	Simulation of place and time, motions controlled by means of mouse and games console
2D Planetarium (Earth-bound astronomy)	
Sky:	analog and/or digital
Constellations:	Pictures, line patterns, and IAU boundaries, all or single, with color selection
Didactic aids:	Complete set of coordinate systems, great circles, scales, lines, markers and other aids
Deep-sky objects:	All Messier objects and other major nebulae and galaxies
Astronomical pictures:	Automatic positioning (AVM data)
Atmosphere (all real-time):	Clouds, rain, mist, snow, halos, rainbow, polar lights, shooting stars, panoramas
Management of rights	
Software:	Flexible license management
Productions:	Rights for powerdome video formats secured by DRM
Services	
Autocalibration:	Camera-based geometry correction
Remote maintenance:	Via the Internet, various service levels
User Group:	Data exchange, downloads, comprehensive library
Show marketing:	Licensing of international fulldome productions (license fees only, no extra costs)

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