

## Glossary

Animation editor	The animation editor is available in the Editor mode as a partial window. Depending on the »Resource class« it offers many functions for animating »Show objects«.
Animation	Animations in powerdome mean selectable settings in »Show objects« such as positioning on the dome, cross-fading and color. The animations possible depend on the type of object and can be defined with »Keyframe« parameters.
Audio	Group of files in the Resources window. Audio means all kinds of importable audio data. Possible formats are *.mp3, *.ac3, *.wav.
Blending	The brightness of zones on the dome where the images of two or more projectors overlap must not be brighter than the non-overlapping image areas. Therefore, one edge zone of every two adjacent image channels is obscured, i.e. black. The effect on the dome is a blending of the edge zones. It is performed electronically and may be supported by mechanical diaphragms (masks) in the projector, depending on the technology applied.
Blending diaphragm	Blending diaphragms are specially computed masks inside the projection lenses, which provide soft blending of the overlapping edge zones of the projection channels. They also prevent projection below the dome horizon. The blending diaphragms are adjusted by the service staff during installation, and their positions must not be changed in any case.
Bookmark	Mark on the »Timeline« within a »Show«, to which you may jump during playback.
Channel	Also known as image channel. In powerdome, an full-dome presentation consists of a number of partial images depending on the projector configuration. Every channel gets its image data from a client PC. One projector can project the image data of one or several channels. During playback, powerdome automatically computes the edge blending between the image channels.
Chapter	Chapters are successive parts of a »Show«. The execution time of each chapter invariably begins at zero. Sub-division into chapters is sensible, e.g., if parts of a show run automatically and other parts are presented live, or if there are opening credits or an advertising section.
Client PC	The Client PCs produce the partial images, one for each »Image channel«. Their number depends on the »Projector configuration«. For SPACEGATE Quinto, e.g., five Client PCs are required.

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Cluster	System of networked computers for controlling powerdome, the production of shows, and image and sound playback. The Cluster consists of a »Master PC« and several »Client PCs«.
Devices	Group of files in the Resources window. Offers project-specific control functions for external devices, e.g., for dome illumination.
Digital planetarium	Powerdome includes a digital planetarium that corresponds to a classical projection planetarium, with presentations of the stars, planets, constellation overlay figures, astronomical coordinate lines and other objects.
Dome light, virtual	Dome light simulated by powerdome (white light projected by projectors).
Dome originals	Also known as dome masters. A dome original is a sequence of images that make up the frames of a video. Dome originals may have the format *.tga (with or without RLE compression) or *.jpg. The resolution required of dome originals depends on the projection equipment used. For example, the resolution recommended for SPACEGATE Quinto is 3 072 x 3 072 pixels.
Dome	A property of »Show objects« and »Layers«, which characterizes still images and videos extending over the entire dome, . unlike »plane« and »panorama«. Layers of the Dome type are used for »Full-dome videos«.
Editor Mode	The Editor Mode, or „Editor“ for short, is a constituent part of the »Show Manager« and the main application window in powerdome. The Editor makes available all tools for compiling a »Show« along the »Timeline«.
Element	Elements are the graphic representatives of the »Show objects« on the »Timeline«. The graph is a bar of variable length (depending on the time it takes to execute a show object) and contains an icon that characterizes the respective show object, and information such as designations and symbols identifying »Animations«. Elements are used to position show objects on the »Timeline« and may be expanded or contracted to vary the »Playback time«.
Encoder	The powerdome program package includes an MPEG encoder, which is converts sequential video frames (»Dome Originals«) into the *.m2v video format.
External Commands	Via the „Devices“ tab in the Resources window of the »Show Manager«, you can integrate commands for controlling external devices into a »Show«. The availability of „external commands“ varies from project to

	project. The commands existing will primarily control dome illumination and projector functions (shutter control).
Full-dome projection	Still-image and video projection onto the entire dome (360° x 180°), with the overall image being assembled from partial images rendered by several projectors. The partial images are blended at the edges for invisible transition.
Full-dome video	Video in a full-dome format. Powerdome uses full-dome videos with special MPEG encoding in the *.m2v format. For every full-dome video there is an associated preview video, which corresponds to the full-dome video but has a low resolution and serves for presentation on the monitor. The file name extension is *.preview.m2v. In powerdome, full-dome videos can be generated from original dome data (»Dome Originals«) by means of the associated »Encoder«.
Gamma value	Correction of the non-linear brightness curve between input and output signal. In powerdome, the gamma value influences the brightness and contrast of projection. The gamma value is set as a parameter for suitable »Resources« (e.g., Full-dome and Live Video). Gamma adjustment can also be made in the powerdome configurator for the specific projection system.
General control system	Computer with control software for controlling various audiovisual components of a planetarium such as sound system, illumination, planetarium projection machine, effect projectors, slide and video projectors. The general control system starts and/or controls all subsystems in automatic and semiautomatic planetarium shows.
Image	File group in the Resources window. Image means all kinds of images and graphics that can be imported as »Plane (planar) image«, »Panorama« or »Full-dome image«. Possible formats are: *.jpg, *.bmp, *.png, *.tga, *.dds. Alpha channels are permissible.
Image, plane	See Plane (planar) image
Image channel	An image channel presents a section of the overall dome image. Each image channel requires a »Client PC« of its own. The number of image channels is not always equal to the number of projectors, as a high-resolution projector may comprise more than one image channel.
Index file	The index file is required for moving the timeline within an full-dome video in the m2v format. The name of the index file must follow the „name.index“ pattern, „name“ to be replaced with the file name of the MPEG video.



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	<p>Index files are required for both the main and preview videos. For creating the index file, right-click on the respective video file in the Windows® Explorer, and in the context menu select „Send to &gt; SeekIndexCreator“.</p>
Keyframe	<p>In powerdome this is a mark in the »Animations editor« that contains certain »Animation« parameters. Every animation contains at least two keyframes, one each at the beginning and at the end of the animation. By setting more keyframes and assigning selectable »Parameters«, you can make your animations highly flexible.</p>
Layer	<p>Layers are a form of structuring a »Show«. A »Chapter« of a show may consist of any number of levels. Every level may contain any number of »Tracks« on which the »Elements« of the show are arranged.</p>
Lines	<p>Group of files in the Resources window. Lines offers functions for the individual presentation of scales, great circles, connecting lines, etc.</p>
Live Video	<p>Group of files in the Resources window. With „Live Video“ you can read in and project video data in real time.</p>
Mapping	<p>The mapping of a still image or video determines the mode of their presentation on the dome. „Plane“ means presentation in a rectangular format tangentially to the dome without spherical adjustment. „Panorama“ is a cylindrical presentation along the horizon covering up to 360°. „Dome“ is the mode for full-dome presentation.</p>
Master computer	<p>See Master PC</p>
Master PC	<p>The Master PC is used for the production and playback of »Shows«. It controls the »Client PCs«. The Master PC is also the operating computer with the graphic user interface (GUI) for your work with powerdome.</p>
Meshes	<p>Every »Channel« uses a mesh of points for geometry adjustment (in the powerdome configurator); this mesh is invisible in image playback. Changes to the meshes cause regional geometric distortion of the images. These are sometimes needed to correct, e.g., the overlapping between adjacent image channels. The meshes are adjusted by Zeiss service staff during installation and start-up and need not be changed as long as projector parameters are unchanged. Meshes can be viewed in the Show-Manager with the command Player Commands &gt; Calibration &gt; Wireframe On.</p>
MIP Maps	<p>These are halftone images of the *.dds format, which contain several version of an image, each with half the resolution. Powerdome automatically determines the minimum resolution that can be used to obtain a good</p>

	image quality. MIP maps can relieve powerdome in rendering, as only the necessary resolution is used instead of the maximum resolution.
Overview channel	In the Player, the full-dome image is shown as an overview channel in a window on the Master PC. On the Client PC, the Player shows only the partial images of the respective channel. The latter can also be displayed on the Master PC via the Player Commands menu.
Panorama	Property of »Show objects«. Panorama presents an image on the dome in a „cylindrical“ zone covering up to 360° along the dome horizon. .
PC cluster	See Cluster.
PDA	Personal Digital Assistant. Small portable computer (pocket PC) permitting wireless live operation of powerdome from anywhere in the domed auditorium. The PDA offers menus for show control, for controlling external devices, and for functions of the digital planetarium.
Plane, planar	Property of »Show objects«. Planar means plane images, contrary to spherically adjusted »panorama« and »dome« images. A plane (planar) image or video is projected onto a rectangular section of the dome only.
Plane (planar) image	Halftone image of rectangular shape and any height-to-width ratio.
Planetarium	Group of files in the Resources window. Permits the presentation of all digital planetarium functions.
Playback duration	Time on the »Timeline«. Taken by the execution of a »Show object«.
Player	The Player is the program module of powerdome's »Show Manager« intended for playback. It splits the image contents between the image channels. The Player is visualized by a separate image window in the operating program, which shows the entire dome image on the Master PC and the partial images of the channels, adjusted for the dome geometry, on the respective Client PCs.
Player Control	A bar with control elements for playback (Sync, Play, Pause, Stop, Previous Bookmark/Chapter, Next Bookmark/Chapter) in the Show Manager.
Play cursor	The play cursor is a vertical line at right angles with the »Timeline«. It indicates the current time position of a »Show« and is used for navigating within the show. The play cursor can be displaced along the timeline with the mouse by drag&drop action. Show elements can be put to the play cursor position by a command.



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Play Mode	The Play Mode is a program module of the »Show Manager«. In the Play Mode, the »Timeline« of the currently running »Show« and the current point of time in the show are displayed.
POWERDOME Cluster	See Cluster
Preview video	See Full-dome video
Projector configuration	Powerdome works no matter what kind of and how many projectors are used for »Full-dome projection«. All data needed by powerdome to correctly split the image data between the projectors, to compute edge blending and to set or correct projector-specific parameters such as gamma values are stored in powerdome's configurator and can be edited there if required.
Properties	<p>Powerdome assigns properties to components. The properties define the presentation of the components on the dome, or the course of the show. Properties are displayed and edited in the Properties window of the »Show Manager«. Components that can be assigned properties are:</p> <ul style="list-style-type: none"><li>- Resources</li><li>- Layers</li><li>- Show objects</li><li>- Shows</li><li>- Bookmarks</li><li>- Triggers</li><li>- External commands</li></ul>
Rendering	The process of generating the image data for the individual projectors from the »Show objects«. In powerdome, rendering is performed in real time.
Resource	Resources are all audiovisual and control data that can be presented or addressed by powerdome. Unlike »Show objects«, resources are not (yet) positioned on the »Timeline«, i.e. they are not part of a »Show«. Resources are imported into powerdome in the Resources window of the »Show Manager«. Certain resources can be assigned selected »Properties« in the Properties window.
Resource class	»Resources« in powerdome are organized by classes. The resources of a class can be accessed in the Resources window of the Show Manager by clicking on the respective tab, e.g., »Video« for importing an full-dome video.
Seeking	Denotes the process of jumping within a show by setting the »Play cursor« to any position of the »Timeline«. Playback then automatically begins in the position thus set.

Show	An assembly of audiovisual data defined in powerdome for playback projection onto the dome. Show documents in powerdome have the file name extension *.show.xml.
Show element	See Element
Show Manager	Program in powerdome for the production and playback of »Shows«. The Show Manager is the most important user interface.
Show object	Show objects are all elements for audiovisual presentations and all control functions integrated in a »Show«. Show objects may be »plane images«, »Full-dome videos«, elements of the »digital planetarium«, control instructions for external devices, etc. Unlike »Resources«, they are parts of a Show, have an execution time (start time within the show, and duration) and may be modified relative to the resource data by »Animations«.
Shutter	The shutter is a part of each projector and can be controlled (i.e., opened and closed) by the SPACEGATE Control software. If it is open, the projector projects the image content supplied onto the dome. If it is closed, it completely obstructs projection and thus suppresses the projector's residual brightness.
Snapping	Show elements on different »Tracks« of a »Layer« can be shifted with the mouse to the start position of another element and „clicked in“ there. „Snapping“ is an easy way to position elements on different tracks to the same time on the »Timeline«. If you do not want to do „Snapping“, keep the Alt key depressed when shifting the element.
Text	Group of files in the Resources window, in which you can edit and position text lines in any format for projection onto the dome.
Timeline	The timeline is the „guide rail“ of a »Show«. It consists of a scaleable time scale and any number of »Chapters« and »Tracks« with the »Show elements«. The timeline is part of the Editor (»Editor Mode«) and is visible in the »Play Mode«.
Track	The »Show elements« are arranged on tracks. Tracks are assigned to the »Layers« on the »Timeline«. A layer may have any number of tracks.
Trigger	Marks a stop point within a »Show«. On arriving at a trigger, the show is stopped until the time code interface has received the time defined by the trigger (parameter), or until you click on the Play button of the »Player Control«.



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### Video

Group of files in the Resources window. Videos can be imported as plane video, panorama or »Full-dome video«. Possible formats are \*.mpg, \*.m2v, \*.avi, \*.vob, \*.wmv.