

Projections

Fall 2013

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...you just can't say it that way
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Small Steps and Giant Leaps

There seems to be an arcane art to how software versions are numbered. Some go from integers, while others skip a few numbers. SCISS is at its core a software engineering team who knows exactly what it takes to build a stable, versatile and easy-to-use Planetarium software where real-time data visualization is front and center. And so we are delighted to share some of the exciting news from a modestly named Uniview 1.6.

First, a bit of background: Together with our partners and users, we have analyzed requirements for real-time planetarium presentations, and identified three central use cases. The first is the classical version of observing the night sky, at different places and over different times, usually on Earth. This outlook has really been at the very heart of presentations since Zeiss invented the planetarium. The second case came when Uniview introduced free flight throughout the digital universe database with the original release of Uniview. However, since releasing Geoscope with Uniview 1.3, there has been an ever growing number of webserver hosting higher and higher resolution terrain datasets, some down to submeter per pixel resolutions. With these datasets, the need for the third case - what we can call a more dedicated terrain observation camera - has become apparent. Now, wouldn't it be nice to have automated, smooth and easy transitions between these three use cases?



These are constellations made by bronze etchings by Polish 17th century astronomer Hevelius. Dataset added by Denver Museum of nature and Science

This is the core of the Uniview 1.6 release. With natural transitions between these modes,

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www.seilerinst.com
3433 Tree Court Industrial Blvd.
St. Louis, MO 63122
314-968-2282 • 800-489-2282

Planetarium Division:
23 Narbrook Park
Narberth, PA 19072-2123
800-726-8805
Fax: 484-278-4951
Cell: 215-694-0023
E-mail: zeiss@seilerinst.com



A Note from Laura Misajet

So what did you do on your summer vacation? I was fortunate to be joined by Ann Wagner from Carl Zeiss Jena for a road trip to the wide open spaces of the American west, with one of the highlights being a pop-in at the Modesto Junior College in California to see the brand new Science Community Center complete with a 40-foot, 100-seat planetarium featuring the Zeiss ZKP4 (LED) optical star projector and the latest Zeiss VELVET Duo fulldome video system. Ken Meidl and William Luebke treated us to a three hour tour which included a fabulous live Uniview presentation given by Ken Meidl to a local business organization, which included a night sky tour using the breathtaking Zeiss ZKP4.



Zeiss ZKP4 (LED) hybrid with Zeiss VELVET Duo at Modesto Jr. College CA

News and Notes

From Laura Misajet
Sales Manager
Seiler Instrument and Mfg. Co., Inc.
Planetarium Division

Planetarium Sales Manager

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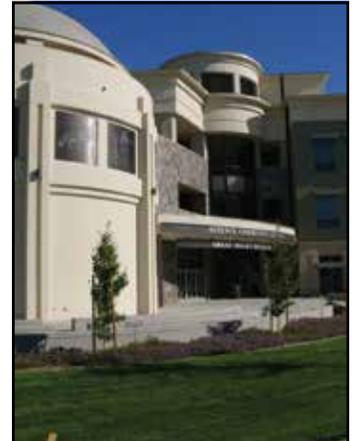
Craig Morris

Brian Wirthlin

The attached Observatory tower houses a PlaneWave CDK 700 28-inch telescope piggy-backed by a 4-inch Takahashi imaging telescope and a Santa Barbara Instruments high resolution spectrograph. Images from the observatory telescope can be viewed in a lecture room and the planetarium, opening the study of the night sky up to a larger audience. The tower features a Foucault pendulum that entertains while teaching science and math concepts and demonstrates the Earth's rotation.

This facility is truly a must see and their doors are always open to the planetarium community anytime you are in the Modesto area. Here's hoping they host a conference soon! Right Ken?

Laura



Exterior of Science Community Center, Modesto Jr. College, Modesto CA



Public space in the new Science Community Center, Modesto Jr. College, CA



Foucault pendulum installed in the observatory tower



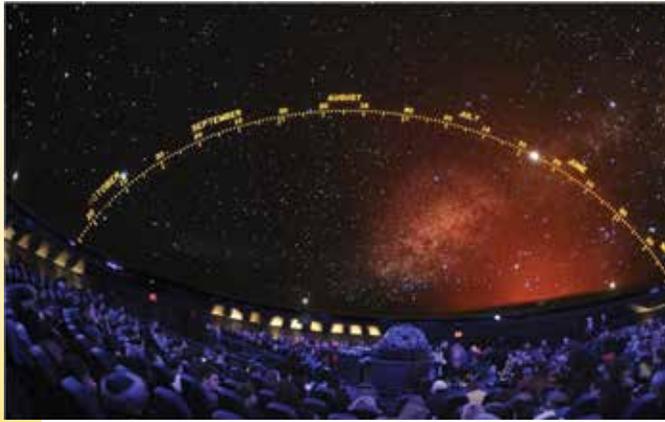
Observatory attached to the Science Community Center, Modesto Jr. College CA



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St. Louis, MO 63122
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Small steps and giant leaps (continued)



This is an inside image from Hayden at AMNH, the birthplace of Uniview.

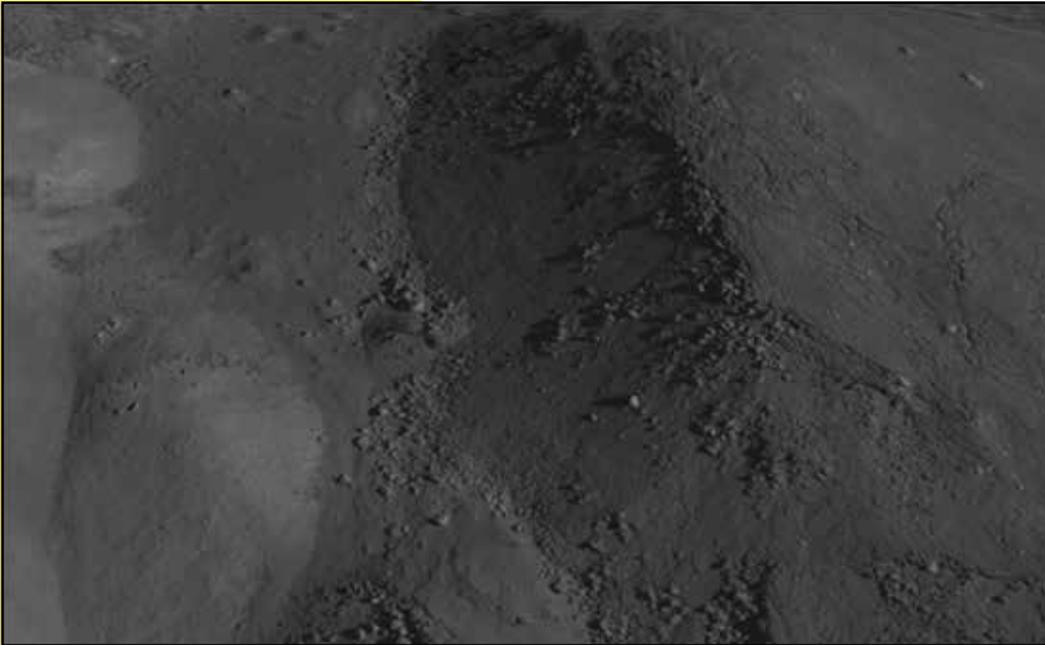


Image from the central peak of the Tycho crater on the moon. It is made by a composite of the Lunar Reconnaissance Orbiter NAC



This is a model of the curiosity rover. The background panorama is a high resolution panorama that the rover took from the Gale crater. You can see mount sharp coming up on the left.

we could add many new features at the same time, while remodeling the user interface to follow the new trends. The playlist widget will expand on easy presentation building, and the combination becomes extremely potent as you can mix Uniview producer timelines and fulldome movies.

As you move from looking up at the night sky over different millennia, and move your observation post to a variety of places, you can now effortlessly fly up to the moon, circle around the apollo landing sites in high resolution texture from LRO before you land and see the Earth rise at the horizon. That's what we call a giant leap! If you want to explore firsthand what Uniview 1.6 has to offer, we would like to invite you to the annual user group in Vancouver, December 12-13. Sign up and learn more by sending an email to usergroup@sciss.se.

What's New in powerdome® II

Since Carl Zeiss introduced powerdome in 2006, this platform for digital fulldome projections has been part of everyday operations in over 60 facilities, mostly in combination with Carl Zeiss optical-mechanical planetarium projectors. Over the years Zeiss has repeatedly adapted powerdome to the computer hardware available while also investing in the extension and improvement of the software. As a result, powerdome is in constant development.

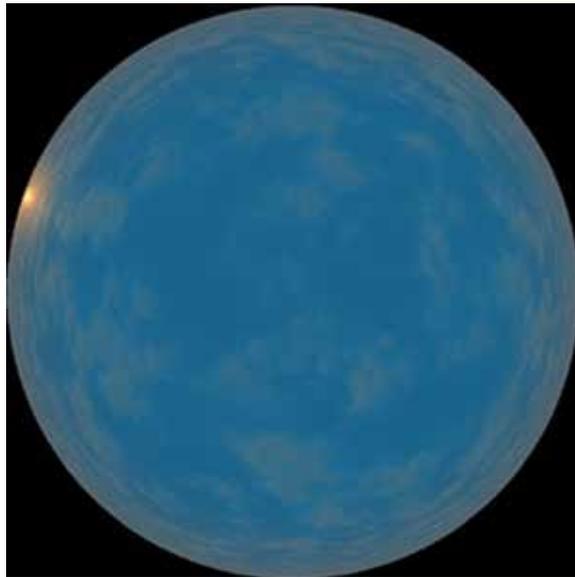
Most visitors to planetariums expect an experience that addresses them directly and reveals a presenter's personal concept and refers to topics and events of local and timely interest. With powerdome, you can prepare fulldome shows with no need to be skilled in scripting, 3D modeling and rendering. You use the same operating panel to control digital planetarium functions, the same way you operate the optical planetarium. Or you can make use of diverse digital resources which you place on a timeline and call up for playback. Animating these resources, by selecting parameters such as position, color, movement, text, sound volume, etc. allows for creating fulldome presentation the easy way.

With powerdome, you have everything you need at hand to create and play fulldome videos. Zeiss has made a point to include an encoder as an integral part of powerdome. In this way you can create fulldome videos from dome master frames on your own without the need to pay for slicing and encoding services. Since, in playback, powerdome also performs channel distribution, geometry correction and edge blending computations in real time, fulldome videos and powerdome shows, once encoded, can be played on all powerdome Systems.

All new systems delivered by Carl Zeiss will come with the powerdome II platform. So what's new with powerdome II? The new 3D model control allows 3D objects to be projected and animated realistically and in real time. Otherwise, such presentations can only be done with complex and expensive 3D software. Carl Zeiss will supply a library with several 3D models. Of course you can load and animate your own models. The new plug-in interface makes it possible to add new system components to powerdome. Examples of plug-ins already implemented are Earth View, Slide Show Creator, Show Package, Atmospheric Effects and Comets:

3D Earth View

This plug-in presents the Earth in three dimensions, with its day and night sides, its atmosphere, clouds, and axis of rotation. Travel to geographic positions by direct live operations, by animation or by coupling with a Zeiss star projector. The transparency, position, rotation and various other model properties can be animated. Markers for a geographic location can be varied in shape, color and size. You can integrate the plug-in into show programming and live presentations in various ways.



Dawn with sun reddening



Comet



Clouds and Sun halo

Slide Show Creator

This plug-in allows you to compile a slide show in powerdome with a few mouse clicks. This is helpful especially if you want to use powerdome to present pictures provided by a lecturer. Select any number of pictures by the drag and drop method. Define fade-over parameters and the presentation time per frame. Define whether the sequence is to be stopped automatically with each frame.

Show Package

With this plug-in you can package all elements belonging to a show for transfer from your work station to other powerdome systems. All resources of the show are copied to a common, freely selectable directory so that even in a complex show no files will get lost.

Atmospheric Effects and Comets

This plug-in offers realistic clouds of adjustable thickness, coverings and motion speeds, plus sun rises and settings with reddening, as well as different types and adjustable intensity Sun halos. The color of the sky can be selected and animated. With the combination of these effects a large range of atmospheric settings can be achieved applicable for Earth but also for Venus' and Mars' skies. All effects are rendered in real time which allows them to be presented in sync with the planetarium control. For instance, the (atmospheric) Sun follows the diurnal motion and changing polar altitudes, whereas the clouds continuously appear in motion and in irregular shape even when diurnal and polar altitude motions are stopped. The comets plug-in lets you render comets and shooting stars. Comet shape and color can be animated with a set of parameters. Both, comet and shooting stars, can be freely positioned in the sky and follow astronomical motions (day, polar altitude). All these renderings are in real time.

A frame rate of 30 frames per second (FPS) has become a standard for playback of fulldome videos. During quick movements, however, the images blur and double images appear as soon as the object position differs by more than a certain limit from frame to frame. By doubling the frame rate, the projected video gets sharper and double images are avoided. In powerdome, contents shown in real time are generally presented with a frame rate of 60fps. To handle 60 frames per second, the encoder and the player have been adapted so you can now choose between classical frame rates or 60 fps.

Powerdome II includes an improved ShowManager. As added capabilities, whole chapters can be exported or imported, and show elements can be grouped, copied and shifted across chapter borders. An optional module available with the new version allows you to create a fulldome video from a timeline programmed fulldome show. The powerdome ShowRenderer renders dome masters from the show elements in the ShowManager as well as from the functions of the SKYCONTROL digital planetarium. Resolution and frame rate are selectable. The exported dome masters can be used to create fulldome video for other fulldome systems.

Powerdome offers ways to communicate with other systems. Zeiss has implemented user-defined interfaces and protocols which can be adapted for other control systems without major programming efforts. What is needed is compatible protocols written in ASCII characters. Some examples:

- Communication with all current Carl Zeiss planetarium projectors
- Protocols for light control systems
- Room light control systems
- Protocols for fulldome projector control systems
- Communication with sound computers
- Communication with earlier planetarium projectors that have already been fully or partially automated by project-specific control systems
- Standardized interfaces: DMX, RS232, RS424, RS484, Ethernet

continued on next page

What's new in powerdome® II continued

Powerdome II now has web interface. This means you can use any device featuring a browser application for remotely controlling powerdome, including many planetarium functions. Start shows from a smartphone, iPad, iPod touch or from a PC connected via WLAN. The web interface contains a user interface for the digital planetarium, with many controls and tools for controlling the planetarium functions. For example, you can vary the color and brightness of all 88 constellation overlays, stick figures, and constellation borders. With the WLAN integrated into powerdome you can offer your planetarium visitors access to the Web Interface. Visitors bringing their smartphone or other device with browser application can now interact. The powerdome Web Interface offers many ways of simultaneous interaction such as voting. Have your audience take part in a majority decision on which show or sequence to play.



New Web-Interface

New to powerdome II is an extended integration of Uniview which offers the capability for all system commands admissible in Uniview to be placed on the timeline or actuated directly. This yields entirely new possibilities of integrating Uniview in the course of a show, among them the direct

invocation of bookmarks, selection of time and place, and selection of celestial body even before Uniview takes over. In this way, smooth transition from analog planetarium projection to the 3D sky and the combination of star projection with 3D effects can take place without the audience noticing any jump or transition.

A camera based automatic geometry correction, originally developed for powerdome VEL-VET, is now available for all other projection systems with mechanical masks. Autocalibration is not tied to powerdome but can be retrofitted to systems supplied earlier. Once installed, the user can effect geometry correction at any time. Autocalibration ensures consistent, exact adjustment, with the least time involved. For an eight-channel system, the procedure will take between 15 and 30 minutes. Once performed, the calibration rarely needs repeating. Readjustment is only necessary after maintenance work on individual projectors.

For many years Zeiss has offered remote maintenance services. At the user's request, Zeiss can access selected computers for express help in case of questions or problems. Zeiss technicians can collect log files from the systems or monitor projectors. Remote service is offered on a variety of levels from online help in operation and maintenance to regular updating of powerdome and Windows. With remote service our specialists can have insight into the customers' computers as if sitting right in front of them. They can diagnose and remedy faults while saving the customer time and money by avoiding unnecessary service visits.

All these features and more are available with new orders and installations.

Visit www.zeiss.de/planetariums for updated information. Please feel free to contact us for demonstrations.

It's not that you're wrong... You just can't say it that way...

By: Brian Wirthlin

The following is a work of fiction; any resemblance to actual planetarians, vampires, zombies, sith lords, or other denizens of the dark side is purely a coincidence. Any resemblance to actual institutions is also coincidental and should not be discussed within earshot of anyone lacking a sense of humor, whimsy, irony, and/or the ability to consider & discount the author's sense of decorum, propriety, and good sense...

/fiction begin

I was 15 years old when I started working at my Planetarium in the Bookstore. Calling it the "Bookstore" was a bit grandiose, but nobody wanted to call it a gift shop or admit that a lot of our merchandise was "a bit" less than scientific. We did have a rather eclectic (and at times dusty) selection of books with an astronomical focus, Sky & Telescope and later Astronomy Magazine, but our big sellers were zodiacal jewelry, postcards, and other trinkets.

The Planetarium was open three nights a week. Tuesday, Friday and Saturday nights were mine during the school year, and I could work pretty much whenever I wanted during the summer. Our busiest times were when rain drove a small percentage of people that originally intended to go to the Zoo to seek a dryer destination. Until Laserium premiered the following year "my" planetarium found its greatest success as a second choice.

There was a thread on DomeL about a year ago where the original post proclaimed that the primary goal of a planetarium was to make money. A number of planetarians responded, "No it isn't, at least not in my case!", and some went so far as to declare that it's not even possible for a planetarium to make money. At the time, I wondered how to put the primary goal of "my" planetarium into words, and with the benefit of the distance in space and time from my 15th year I can proclaim that the primary goal of "my" planetarium was "Do not embarrass the guy whose name is on the building." It's a pretty obvious goal when you think about it. Somebody gives you a bunch of money and the last thing you want to do is embarrass him, but it's a goal that requires certainty. The problem is that creativity isn't certain. Creativity requires sticking your neck out. The reality is sometimes it's failure that breeds success. And in any case I'm quite certain that "the guy whose name was on the building" would have wanted "Make me proud!" to be the goal.

I'm happy to say that in the mid to late eighties the new management of my Planetarium redefined its goal to something closer to "Make me proud!", some of my old friends succeeded, and made the planetarium people's first choice for a while. Sadly those friends are no longer working under a dome, but I'm still proud of them.

/fiction end

In a totally different institution at a similar point in time if not space, another old friend, Laura Kyro wrote "The Little Star Who Could". If you're at the GLPA Conference in Peoria, IL this Fall, you might want to be on the look out for Anna Green. She's been working on a wonderful new twist on Laura's "Little Star". I doubt it will ever make money, but it absolutely passes the "Make me proud!" test.



The Best of Both Worlds!

The Zeiss ZKP4 star projector delivers fiber optic stars, the same technology in the larger Starmaster and Universarium, now with brilliant LED high intensity lamps for domes 20 - 50 feet.

Introducing: Velvet Duo Fulldome

for domes from 6 to 14 meters with either center or peripheral projection!

The two projection types work together as one, providing a complete planetarium solution.



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23 Narbrook Park
Narberth, PA 19072-2123
800-726-8805
Fax: 484-278-4951
Cell: 215-694-0023
E-mail: zeiss@seilerinst.com



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Planetarium Division:
23 Narbrook Park
Narberth, PA 19072-2123
800-726-8805
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E-mail: zeiss@seilerinst.com

UPCOMING EVENTS:

GLPA (Great Lakes Planetarium Association) will take place in Peoria, Illinois October 16 - 19, 2013. More information may be found on the Conference Materials page http://www.glpaweb.org/conference_materials_2013

Please contact host Sheldon Schafer at sschafer@peoriariverfrontmuseum.org

Come see the Zeiss ZKP4 (LED) with the VELVET Duo hybrid system which will be demonstrated during the conference Wednesday night.

ASTC (Association of Science - Technology Centers) Annual Conference will take place in Albuquerque, New Mexico October 19 - 22.

This year's conference is hosted by Explora, National Museum of Nuclear Science and History and New Mexico Museum of Natural History and Science. Online registration is closed, but on-site registration opens Friday, October 18th. Seiler will have a booth in the vendor hall, please be sure to stop by and visit us. For more information check out www.conference.astc.org.

BLENDER CAMP 2013

I am pleased to announce that King Science and Technology Magnet and Dr. Martin Luther King, Jr. Planetarium in Omaha, NE will be hosting Blender Camp and Great Plains Planetarium Association (GPPA) Informal Meeting on November 1 and 2.

The workshop:

Blender is an application that can be used to make planetarium presentations and other visuals for the dome or flat screen. I have used Blender in the dome for several years. The current plan of action is to have participants complete my Designer Planet Unit to get a basic understanding of the Blender (version 2.68) interface, and at the end of the workshop you will have the domemasters for your planetarium.

GPPA Business:

Finish the amending of the GPPA bylaws.

Show off your work:

If you have something you want to show on the dome please contact me so we can get it formatted.

Who is invited: GPPA members, Planetarium staff members, and People interested in learning Blender

What do I bring: A flash drive or external hard drive to take your project home, sorry no outside laptops.
Your favorite Astronomy book (You will need it for the activities).
A .png, .jpg, or .gif of your planetarium's logo

Where is it: King Planetarium at 2110 Pratt St. Omaha, NE 68110 (call 402-557-4494 if you get lost)

When is it: Nov 1 3:00 PM to 9:00 PM and Nov 2 9:00 AM to 6:00 PM

How much is it: FREE to GPPA members (see our website <http://www.spacelaser.com/gppa/> for membership information), \$15 per person for non-members.

How do I register: Send an email to Jack Northrup jnorthrup@fbx.com to start the registration process.

Hotels: These are hotels that are near the planetarium.

Sleep Inn & Suites Airport	2525 Abbott Drive	402-342-2525
Hampton Inn & Suites Omaha/Downtown	1212 Cuming St.	402-345-5500
Holiday Inn Omaha Downtown	1420 Cuming St.	402-341-0124
Country Inn & Suites Airport	2210 Abbott Drive	712-347-5600

Hope to see you in Omaha

Jack L. Northrup

UNIVIEW USERS GROUP

On December 12-13, the HR MacMillan Space Centre in Vancouver will be invaded by Uniview users from all over the world. With sessions for beginners and advanced users alike, this year's user group promises to be something special. Besides a full day in the dome, there will also be lots of focus on the upcoming release Uniview 1.6. To sign up and get access to special rates at the conference hotel, please visit the User Echo or Ucare support sites or contact us directly.

Hotel Info:

- Best Western Sands Hotel
<http://www.bestwesternsandshotelvancouver.com/> or <http://www.rpbhotels.com/>
- We recommend calling in order to get the proper rate. Toll free number 1-800-663-9400
- The special room rate is \$85.00++ a night and that will only last until 30 days prior to the 11th of December. Group Name is "Uniview User Group" or the promo code of 2422.

See you in Vancouver!
The SCISS team