



Data2Dome

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Planetarium)

“Industry standards”

- IMERSA AFDI/IPS Dome Standard Adoption: Typically 4k/30 FPS jpg sequences, 5.1 WAV audio
- Astronomy Visualization Metadata (AVM) standard
- Data2Dome standard



Why we need to change the way we present news and data

1. Astronomy is a dynamic discipline. New press releases, images, videos and data are being published every day.
2. But, this flow of exciting new content is typically not integrated in our products: new data is typically presented days or even weeks later — and often not at all
3. As a result, the planetarium and other centres of astronomy competence, lags behind blogs, newspapers, TV and other media.
4. AVM and Data2Dome (D2D) project aims at streamlining the flow of content from research institutions to planetariums, offering audiences a unique opportunity to access the latest data from space in near real time

What is necessary?

1. Data aggregation in one database
2. Instant access to content world-wide
3. A way to alert the users
4. Good visual overviews for users
5. Good data: Historical events, sky events, images, videos, show sequences
6. Gathering the community around one set of tools and standards like IMERSA AFDI/IPS Dome Standard, Data2Dome and the Astronomy Visualisation Metadata
7. Liberal licensing: Creative Commons Attribution.

Data2Dome relies on:

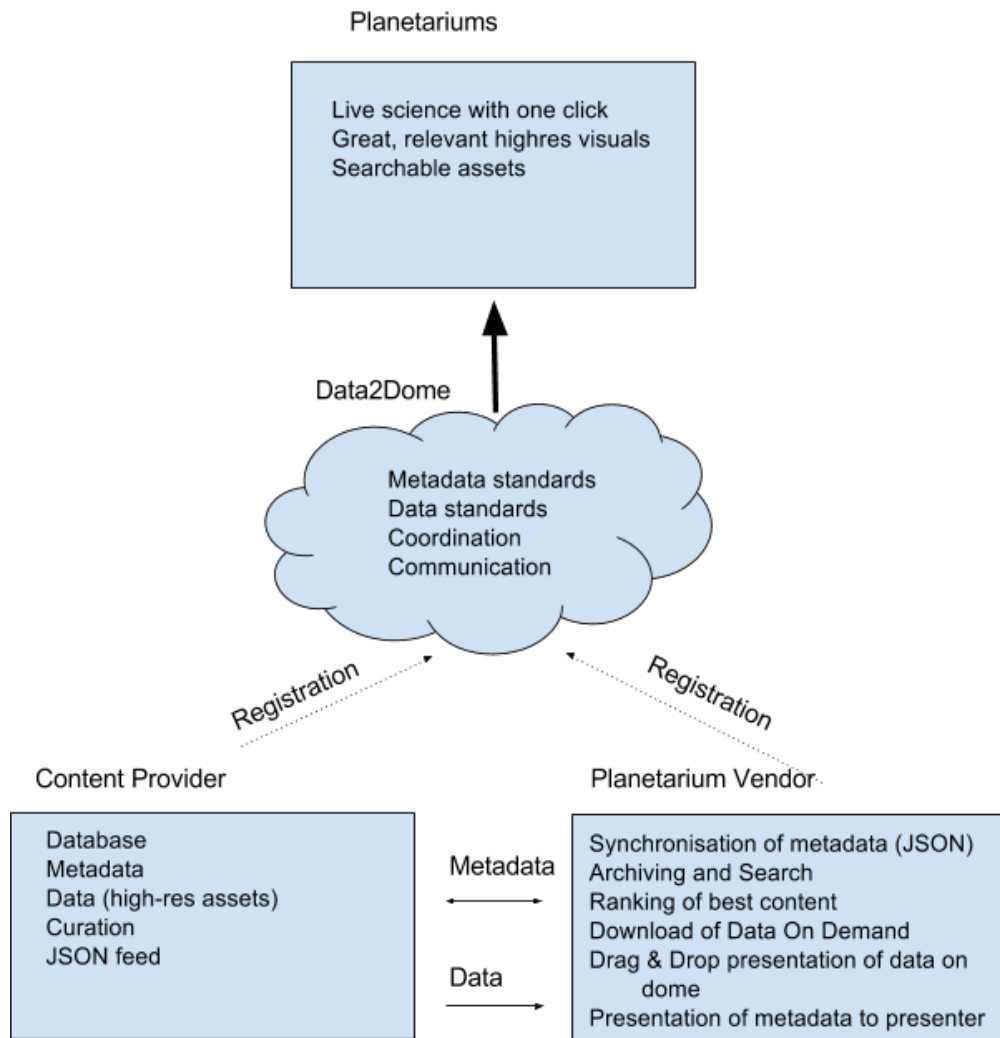
- **standardisation** of formats and process
- consolidation of data or metadata in online **databases**
- a combination of **staff curation of assets** as well as **crowd-curation**
- a **ranking system** on the side of the vendors
- **distribution** via the Internet.

Every morning, planetarium presenters around the world will be able to access a menu that will allow them to select interesting news and fresh datasets — news, sky event data, historical event data and more (see the use cases below) — and mark up the full datasets and metadata for download, for possible inclusion in show segments during the day.

Some of these items may be under embargo and will only be shown when they are public. In some sense the presenter can be seen as an “Astronomical Weatherman” being able to report on fresh events almost as they take place.

- **Descriptive metadata** as support for the presenter: concise, well-written descriptions of the content; credits; license; embargo date; links to more information etc. for the planetarium lecturer. The Astronomy Visualization Metadata Standard has been chosen for this.
- **Flat videos**
- **Flat images**, including planetary maps, images of sky objects, all-sky panoramas/full dome images
- **Full dome videos**
- **Audio**, including interview clips, sounds, music
- **3D objects**
- **Show sequences**, including presentation metadata

Implementation



Digistar 6

- Data2Dome is integrated in Digistar 6 from Evans & Sutherland with 20,000+ images and 5000+ videos.



EVANS & SUTHERLAND

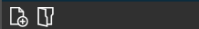
- Data providers so far:
 1. ESO (images, videos)
 2. Hubble (images, videos)

Via AstroPix (Robert Hurt/IPAC):

 3. Spitzer
 4. Chandra
 5. GALEX
 6. WISE
 7. NuSTAR
 8. Planck
 9. Herschel
- Also implemented in:
 - SureyyaSoft, Digitalis, Emerald, Sky-Skan Dark Matter, RSA Cosmos



DomeSharingWorkspace

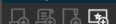


Presentations

Playlists

History

Library



Start Search



All Digistar Content

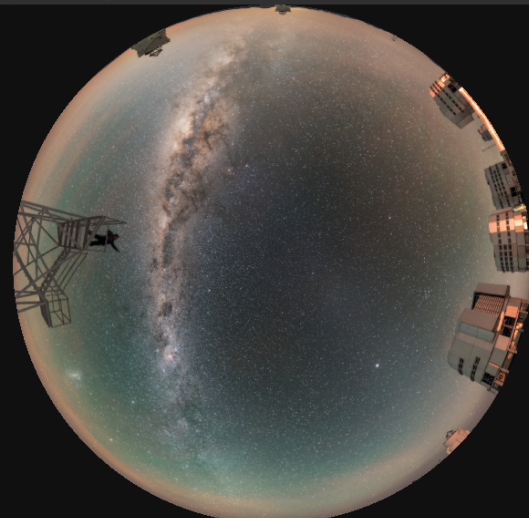
- ☑ Sky
 - ☑ Named Stars
 - ☑ Asterisms
 - ☑ Constellations
 - ☑ Solar System
 - ☑ Deep Space Objects
 - ☑ Datasets
 - ☑ Guides
- ☑ User Content
- ☑ Cloud Content
- ☑ System Resources
- ☑ Data2Dome Content
 - ☑ ESO
 - ☑ Images
 - ☑ Images
 - ☑ Spherical All-Sky
 - ☑ Hemispherical All-Sky
 - ☑ Video
 - ☑ ESA

	Name	Created By	Rating	Upload Date
	The Next-Generation Transit Survey	European Southern Observatory		1/26/2017
	ALMA expanse	European Southern Observatory		1/26/2017
	Paranal bow — extended	European Southern Observatory		1/18/2017
	Milky Way between UTs	European Southern Observatory		1/18/2017
	Dawn at La Silla	European Southern Observatory		1/18/2017
	ALMA gegensein	European Southern Observatory		11/24/2016
	La Silla under the arch	European Southern Observatory		10/21/2016
	Milky Way glow at Paranal	European Southern Observatory		10/11/2016
	Extended panoramic Adaptive Optics	European Southern Observatory		10/11/2016
	Hunter of the night	European Southern Observatory		10/4/2016
	Extended desert arc at Paranal	European Southern Observatory		10/4/2016
	Celebrating the night	European Southern Observatory		10/4/2016
	ESO Director General at the VLT	European Southern Observatory		9/28/2016
	Big and small	European Southern Observatory		9/28/2016
	Extended auxiliary observing at Paranal	European Southern Observatory		9/26/2016
	Extended Paranal panorama	European Southern Observatory		9/23/2016
	Moonshine over La Silla	European Southern Observatory		9/22/2016
	Milky Way over the Swedish-ESO Submillimetre	European Southern Observatory		8/26/2016
	Inside VISTA	European Southern Observatory		8/23/2016
	Coffee break La Silla style	European Southern Observatory		8/3/2016
	ESO's Very Large Telescope Array	European Southern Observatory		8/2/2016
	A comet across the Zodiac	European Southern Observatory		8/1/2016
	Night sky at La Silla	European Southern Observatory		8/1/2016
	The lonely road to La Silla	European Southern Observatory		7/31/2016

Shortcuts

Content

Dome View



Sky Date & Time Location Navigation Controls Information



Celebrating the night



In this panorama, extended to 360 x 180 degrees (with black) version, two of the four small Auxiliary Telescopes stand beside their larger counterparts, the four Unit Telescopes of the ESO Very Large Telescope (VLT) in Chile. In this fantastic moonlit world, the line of the Milky Way splits the sky, under which the faint blotches of our neighbouring dwarf galaxies — the Large and Small Magellanic Clouds — are just visible. The photographer celebrates the sky from atop a platform.

Links to alternative projections of this image:

- Alternative projection of this image
- Fisheye projection of this image

Credit ESO/B. Tafreshi

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European Southern Observatory
Karl-Schwarzschild-Strasse 2
Garching bei München, D-85748

Presenter's Sample Workspace



Presentations

- Shows
- Trailers
- Night Sky-Spring (P)
- Night Sky-Summer
- Night Sky-Autumn
- Night Sky-Winter (I)
- Basic Planet Tour
- Advanced Planet To
- Milky Way Tour
- SkyShow

Playlists

- Trailers (Loopable)

Library Events!



- All Digital Content
- Sky
- Named Stars
- Asterisms
- Constellations
- Solar System
- Deep Space Objects
- Datasets
- Guides
- User Content
- Cloud Content
- System Resources
- Data2Dome Content
- Astropix
 - Images
- Images
- Spherical All-Sky
- Hemispherical A
- ESO
- ESA

Shortcuts

Content



Dome View



Sky Date & Time Location Navigation Controls Information



Cosmic 'Winter' Wonderland



Credit: X-ray: NASA/CXC/PSU/L. Terziani et al; Optical: UKIRT; Infrared: NASA/Spitzer/Caltech

http://chandra.harvard.edu/photos/image_000.html

Astropix beta
Chandra X-ray Observatory
60 Garden St.
<http://chandra.harvard.edu>

Chandra X-ray Observatory Center
cxcpub@ifa.harvard.edu
617.495.7341

Added: 12/18/2016 5:00 PM
Size: 0 KB
Resolution: 3600 x 2850 px

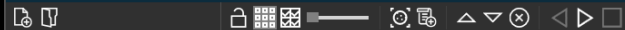
This composite image captures the star formation region called NGC 6357 located within the Milky Way galaxy. X-rays from Chandra and ROSAT (purple) reveal hundreds of point sources, which are the young stars in NGC 6357, as well as diffuse X-ray emission from hot gas. These have been combined with infrared data from Spitzer (orange) and optical data from the SuperCosmos survey (blue) to complete this spectacular cosmic vista.

Position (RA): 17:25:07
Position (Dec): -34:19:03
Distance: 5500 ly
Field of view: 0.0002° x 0.0002°

Additional Information



DomeSharingWorkspace



Presentations

Playlists

History

Library

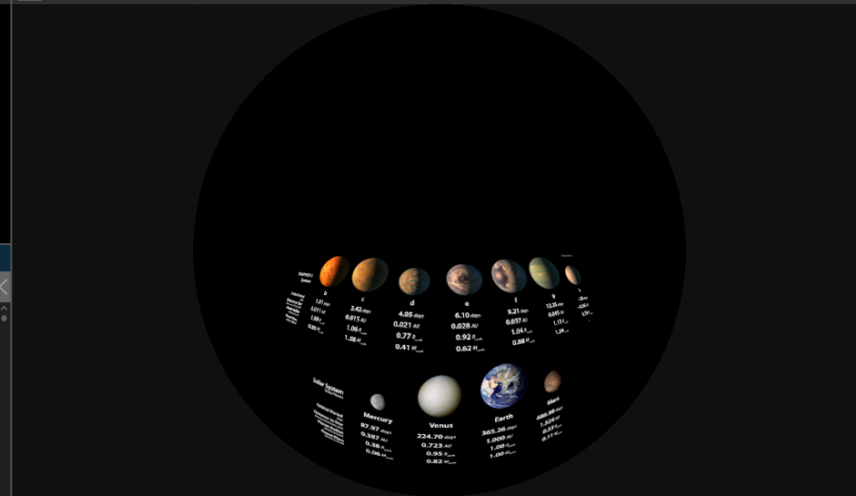


All Digital Content

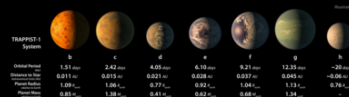
- ☐ Sky
 - ☐ Named Stars
 - ☐ Asterisms
 - ☐ Constellations
 - ☐ Solar System
 - ☐ Planets & Sun
 - ☐ Mercury
 - ☐ Venus
 - ☐ Earth
 - ☐ Mars
 - ☐ Jupiter
 - ☐ Saturn
 - ☐ Uranus
 - ☐ Neptune
 - ☐ Dwarf Planets
 - ☐ Small Solar System B
 - ☐ Deep Space Objects
 - ☐ Datasets
 - ☐ Guides
 - ☐ User Content
 - ☐ Cloud Content
 - ☐ System Resources
 - ☐ Data2Dome Content
 - ☐ ESO
 - ☐ Images
 - ☐ Video
 - ☐ ESA

Name	Created By	Rating	Upload Date
The orbits of the seven planets arc	European Southern Oi		2/22/2017
Light curves of the seven TRAPPIST	European Southern Oi		2/22/2017
Screenshot of ESOcast 96	European Southern Oi		2/22/2017
Artist's impression of view from pl	European Southern Oi		2/22/2017
Comparison of the TRAPPIST-1 sys	European Southern Oi		2/22/2017
Light curve of TRAPPIST-1 — shov	European Southern Oi		2/22/2017
Comparison of the sizes of the TR	European Southern Oi		2/22/2017
Artist's impression of view from dis	European Southern Oi		2/22/2017
VLT observations of the light curv	European Southern Oi		2/22/2017
Comparing the TRAPPIST-1 planet	European Southern Oi		2/22/2017
Comparison of the TRAPPIST-1 sys	European Southern Oi		2/22/2017
Artist's illustrations of planets in TR	European Southern Oi		2/22/2017
Artist's impression of view from on	European Southern Oi		2/22/2017
Artist's impression of the TRAPPIST	European Southern Oi		2/22/2017
Comparison of the TRAPPIST-1 sys	European Southern Oi		2/22/2017
Seven planets orbiting the ultraco	European Southern Oi		2/22/2017
Artist's impression of the TRAPPIST	European Southern Oi		2/22/2017
AstroCamp students	European Southern Oi		2/20/2017
ALMA's Hole in the Universe	European Southern Oi		2/19/2017
False Dawn	European Southern Oi		2/12/2017
When Stars Explode	European Southern Oi		2/5/2017
The Cat's Paw and Lobster Nebula	European Southern Oi		2/1/2017
Highlights from VST image of Cat's	European Southern Oi		2/1/2017
The star formation regions NGC 6:	European Southern Oi		2/1/2017

Dome View


[Sky](#)
[Date & Time](#)
[Location](#)
[Navigation](#)
[Controls](#)
[Information](#)


Artist's illustrations of planets in TRAPPIST-1 system and Solar System's rocky planets



This infographic displays some artist's illustrations of how the seven planets orbiting TRAPPIST-1 might appear — including the possible presence of water oceans — alongside some images of the rocky planets in our Solar System. Information about the size and orbital periods of all the planets is also provided for comparison; the TRAPPIST-1 planets are all approximately Earth-sized.

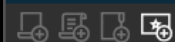
Additional Information

Credit: NASA

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 European Southern Observatory
 Karl-Schwarzschild-Strasse 2

Library



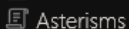
Start Search



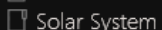
All Digistar Content



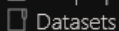
Named Stars



Constellations



Deep Space Objects



Guides

User Content

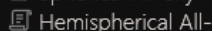
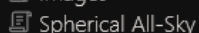
Cloud Content

System Resources

Data2Dome Content



Images



Video

ESA

		Name	Created By	Rating	Upload Date
		The orbits of the seven planets around TRAPPIST	European Southern Observatory		2/22/2017
		Artist's illustrations of planets in TRAPPIST-1 syst	European Southern Observatory		2/22/2017
		Light curves of the seven TRAPPIST-1 planets as	European Southern Observatory		2/22/2017
		Artist's impression of view from one of the midd	European Southern Observatory		2/22/2017
		Artist's impression of view from planet in the TR	European Southern Observatory		2/22/2017
		Screenshot of ESOCast 96	European Southern Observatory		2/22/2017
		Artist's impression of the TRAPPIST-1 planetary :	European Southern Observatory		2/22/2017
		Light curve of TRAPPIST-1 — showing the dimn	European Southern Observatory		2/22/2017
		Comparison of the TRAPPIST-1 system with the	European Southern Observatory		2/22/2017
		Comparison of the TRAPPIST-1 system and the i	European Southern Observatory		2/22/2017
		Seven planets orbiting the ultracool dwarf star 1	European Southern Observatory		2/22/2017
		Comparison of the sizes of the TRAPPIST-1 plan	European Southern Observatory		2/22/2017
		Artist's impression of the TRAPPIST-1 system	European Southern Observatory		2/22/2017
		Comparison of the TRAPPIST-1 system with the	European Southern Observatory		2/22/2017
		Artist's impression of view from distant planet in	European Southern Observatory		2/22/2017
		VLT observations of the light curve of TRAPPIST	European Southern Observatory		2/22/2017
		Comparing the TRAPPIST-1 planets	European Southern Observatory		2/22/2017
		AstroCamp students	European Southern Observatory		2/20/2017
		ALMA's Hole in the Universe	European Southern Observatory		2/19/2017
		False Dawn	European Southern Observatory		2/12/2017
		When Stars Explode	European Southern Observatory		2/5/2017
		The Cat's Paw and Lobster Nebulae	European Southern Observatory		2/1/2017
		Highlights from VST image of Cat's Paw and Lot	European Southern Observatory		2/1/2017
		The star formation regions NGC 6334 and NGC	European Southern Observatory		2/1/2017

Shortcuts

Content



When Stars Explode



Credit: ESO Acknowledgement: Flickr user Josh Barrington

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Over 75 million light-years away in the constellation of Virgo (The Virgin) lies NGC 4981 — a spiral galaxy with a rather explosive past.

NGC 4981 was discovered on 17 April 1784 by William Herschel, and subsequently documented in John Dreyer's New General Catalogue. Over a century later, on 23 April 1968, the galaxy once again made it into the records when a Type Ia supernova — a stellar explosion in a binary star system — occurred within its confines: SN 1968l. SN 1968l, however, was not to be the galaxy's only supernova. Decades later, the core collapse of a massive star led to supernova SN 2007c.

This spectacular shot of NGC 4981 — not showing any of the supernovae explosions; the bright star visible in the image is a foreground star — was captured by FORS, the visible and near-UV Focal Reducer and low dispersion Spectrograph for ESO's Very Large Telescope (VLT). FORS is the Swiss Army knife of ESO's instruments — it is able to study many different astronomical objects in many different ways, and is responsible for some of the most iconic photos ever captured with the VLT (see [eso9948f](#) and [eso0202a](#)).

The data to create this image was selected from the ESO archive by Josh Barrington as part of the Hidden Treasures competition.

Position (RA): 197.2034 °

Position (Dec): -6.77698 °

Distance: 75000000 ly

Field of view: 0.10327 x 0.08422 °

Additional Information



European Southern Observatory
Karl-Schwarzschild-Strasse 2
Garching bei München, D-85748
Germany
<http://www.eso.org>

Added: 2/5/2017 10:00 PM

Size: 3.23 MB

<https://supernova.eso.org/ips>



