

# Sharjah Centre for Astronomy and Space Sciences (SCASS)

## Present & Future

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Chancellor of Sharjah University  
President of AUASS

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Delivered by: Marwan Shwaiki  
Planetarium Director





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# SCASS Planetarium

18 meter hemispherical dome screen, made up of custom shaped aluminium panels with tiny perforations across the entire surface, is room for 200 guests in comfortable premium grade seats.

The dome is installed with a gentle 10 degree tilt, carefully chosen to make for an optimal viewing experience while respecting the integrity of the classical planetarium and the similarities of being outdoors under a real night sky.

In the ground floor in the custom designed server room is a powerful computer cluster with computational power far beyond what a single computer can manage.

# The Planetarium Hardware and Software

The hardware and software enables a Colorspace system capable of depicting an interactive model of the entire observable universe, extending beyond 13.7 billion light years from Earth, as seen from any vantage point and at any point in time. The cluster is synchronized to millisecond precision by using the NVIDIA QUADRO sync approach, a combination of hardware and software that ensures that all nodes in the system swap frames at exactly the same millisecond, thus making sure that all computers are using the same clock for its rendering and simulation.

# Computer Cluster

The computer cluster feeds video signals through extended dual link DVI signals to a total of seven high resolution projectors, Barco F35 with a native resolution of 2,560 x 1,600 pixels per projector. These projectors bring an image to the spherical dome that is corrected for the distortion arising out of a spherical projection surface, and blended together to make the seven images appear as a single seamless 15.8 million pixel image, corresponding to closer to 5,000 pixels across the meridian of the dome.

# Star Ball

In the centre of the dome is an exquisite optical instrument, the Megastar II-A by manufacturer Ohira Tech from Japan. This lightweight optical instrument provides a brilliant star field consisting of more than 10 million individual stars, and seven dedicated projectors for the Sun, the Moon and the five planets visible from the Earth.

# UNIVIEW

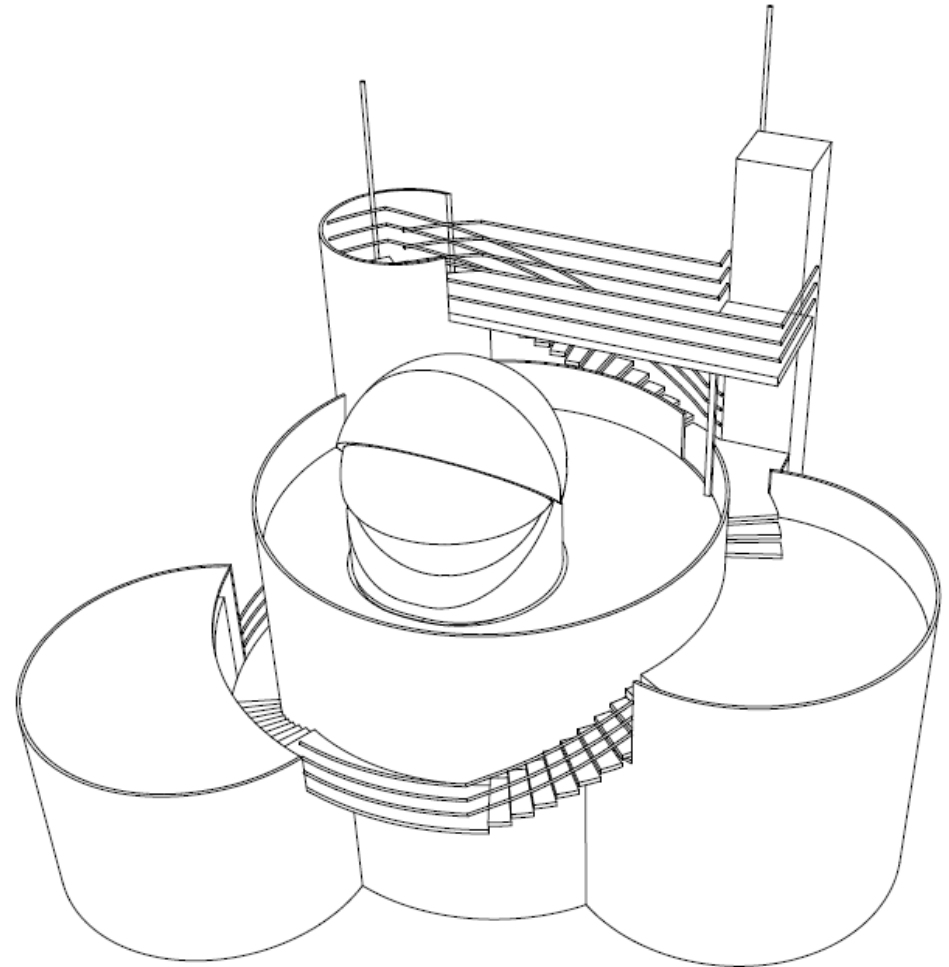
The simulation and data visualization software is Uniview, developed by the SCISS company and used by over 150 planetariums around the world. At its core, Uniview is built around a unique feature called the Scalegraph. The Scalegraph addresses and solves the inherent limitation in any computing and rendering system to cope with the vast range of scales of the universe.



# The Sharjah Optical Observatory

A small optical observatory consisting of a reflector telescope 45 centimeters in diameter to observe the galaxies, stars and planets.

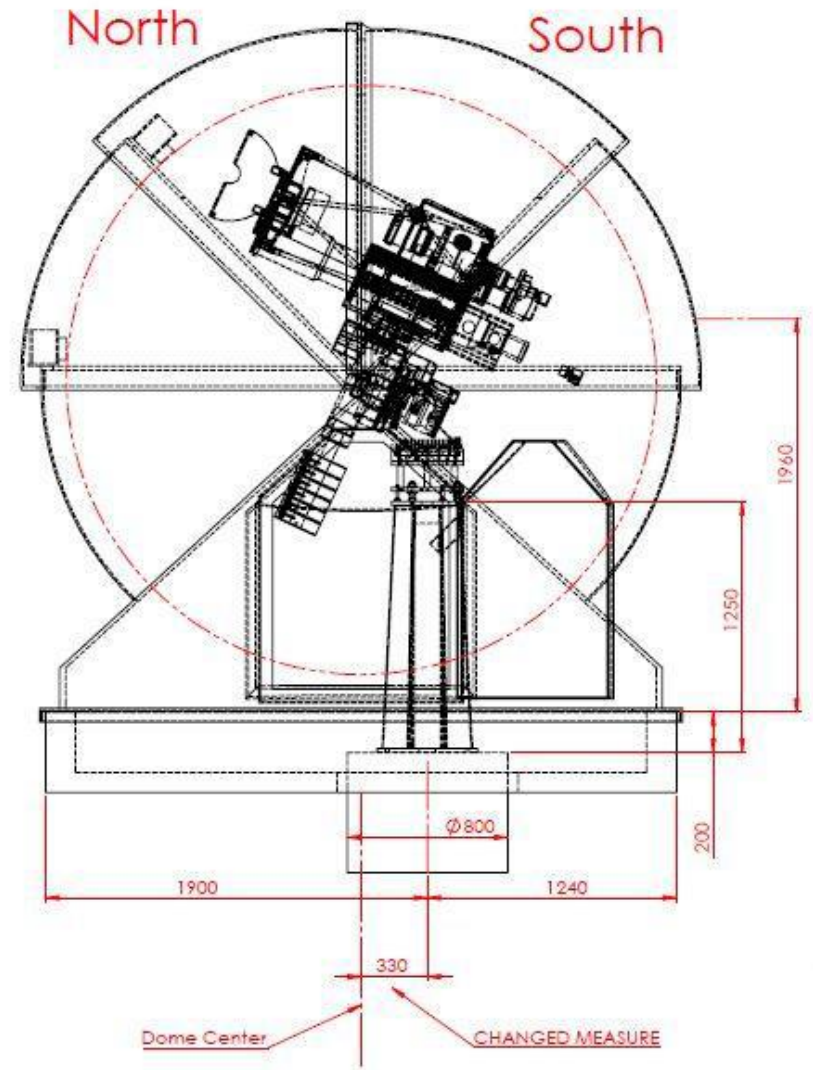
Connected to it is a refractor telescope 20 centimeters in diameter to observe the sun and moon with highly developed astronomical devices, including a digital camera (CCD) and a high-resolution Echelle Spectrograph with auto-giving and remote calibration ports.



# SHARJAH OBSERVATORY







- Fully assembled dome in factory, with dust proof sealing,
- Dust-proof dome control rack with active cooling and drying



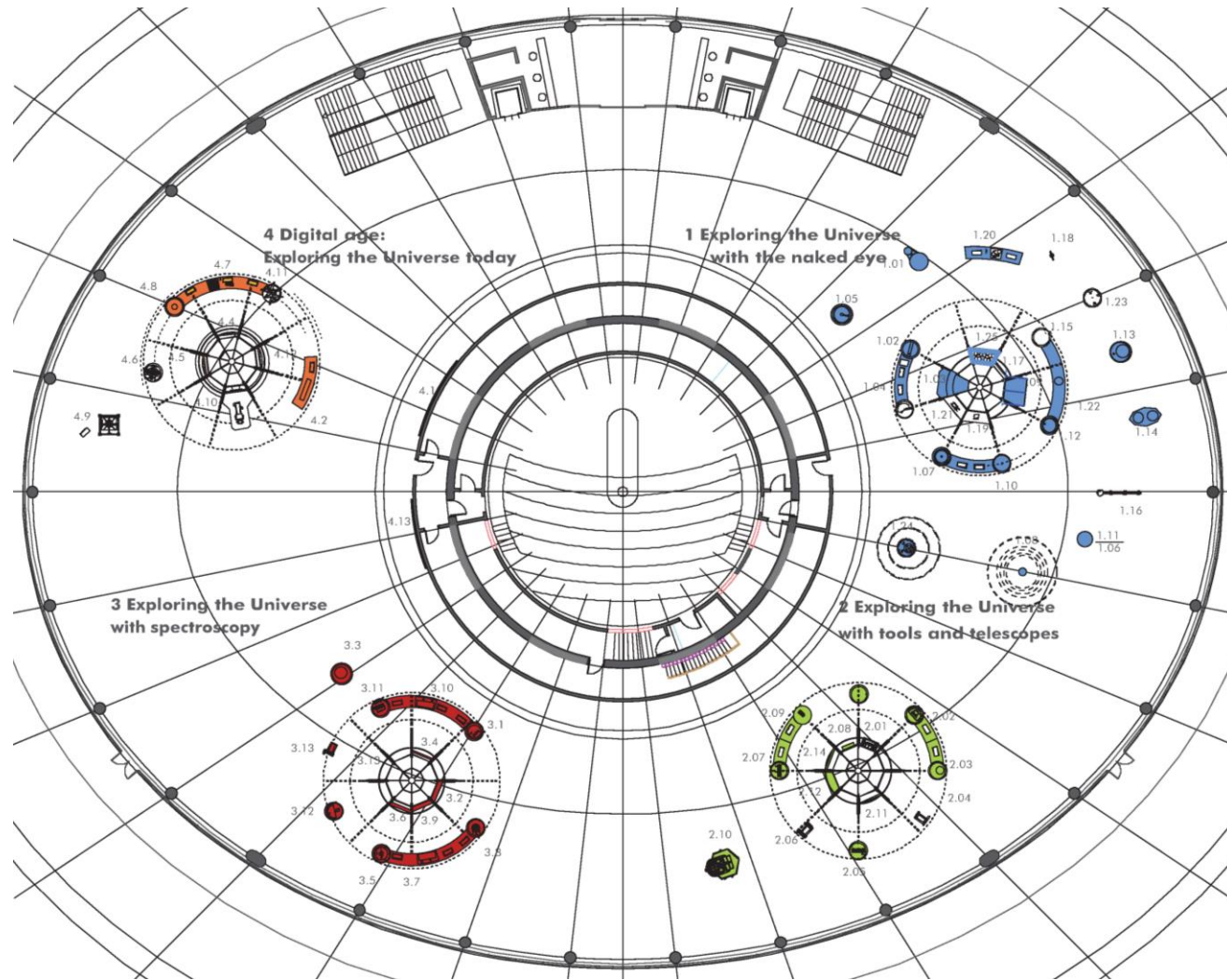
10<sup>th</sup> December, 2014



# Astronomy, Space and Physics Educational Exhibitions:

An advanced space display/Exhibition that allows for viewing the exploration of the universe during four (4) different time periods as seen by: 1) The naked eye; 2) Through Galilean telescope; 3) Spectrographic technology; and 4) The space technology of today.

A space technology display that includes space discoveries since the launching of the first satellite in 1957 until now.



# The Concept of the SCASS

Approximate area of the center 400,000m<sup>2</sup>

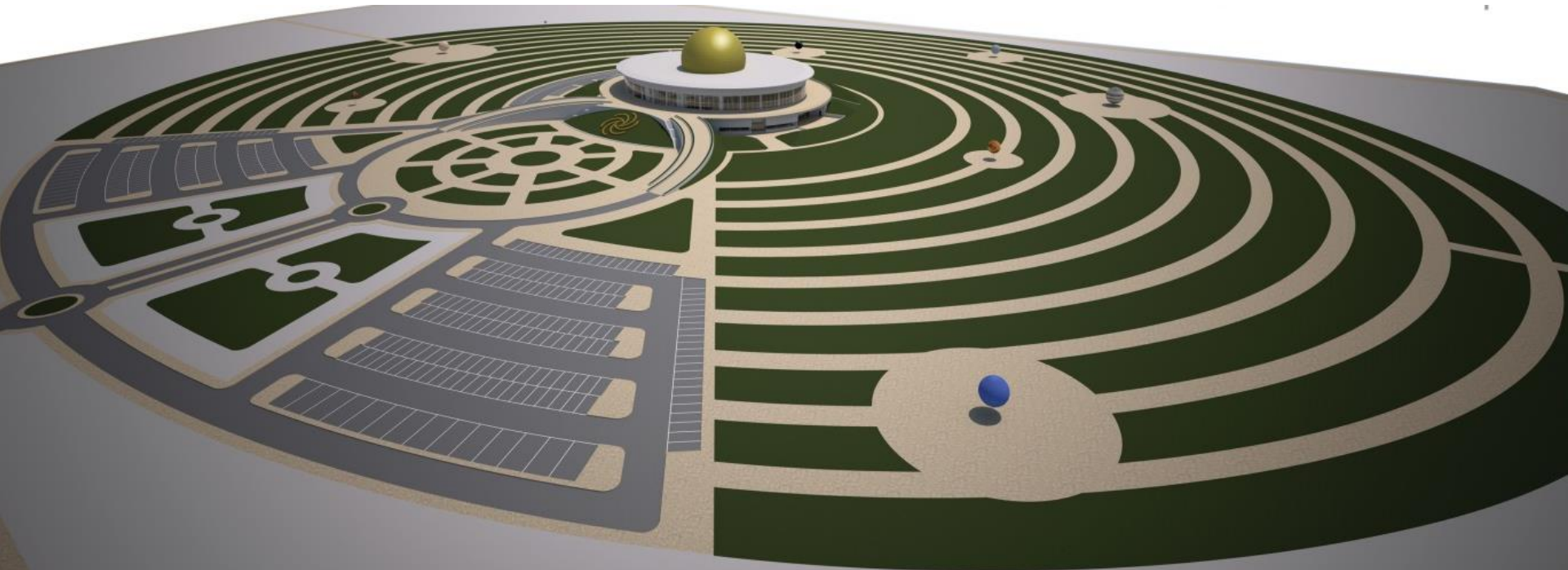
the Project was fully supported by:

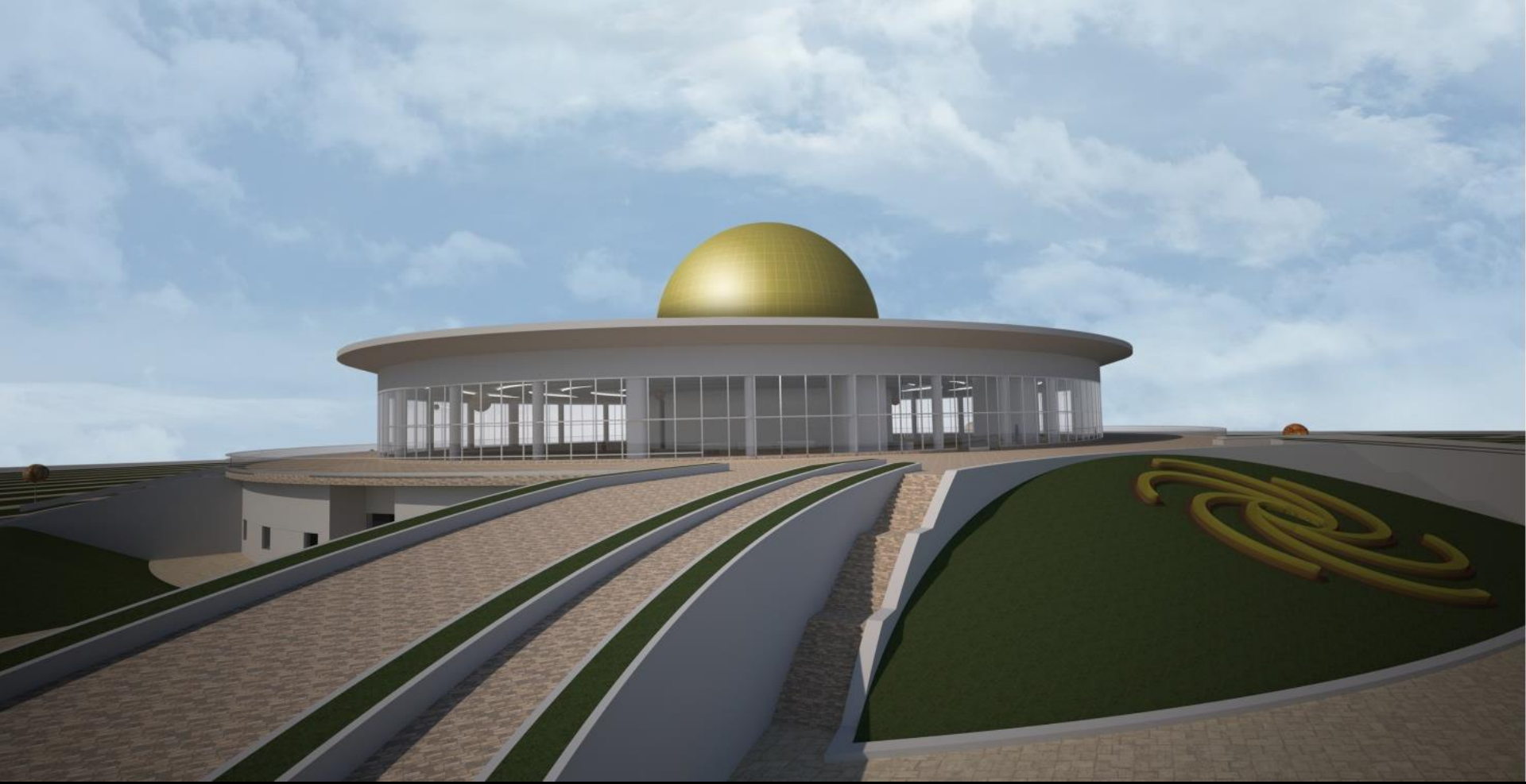
**His Highness Sheikh Dr. Sultan Bin Mohammed Al Qasimi**

Member of the Supreme Council, Ruler of Sharjah

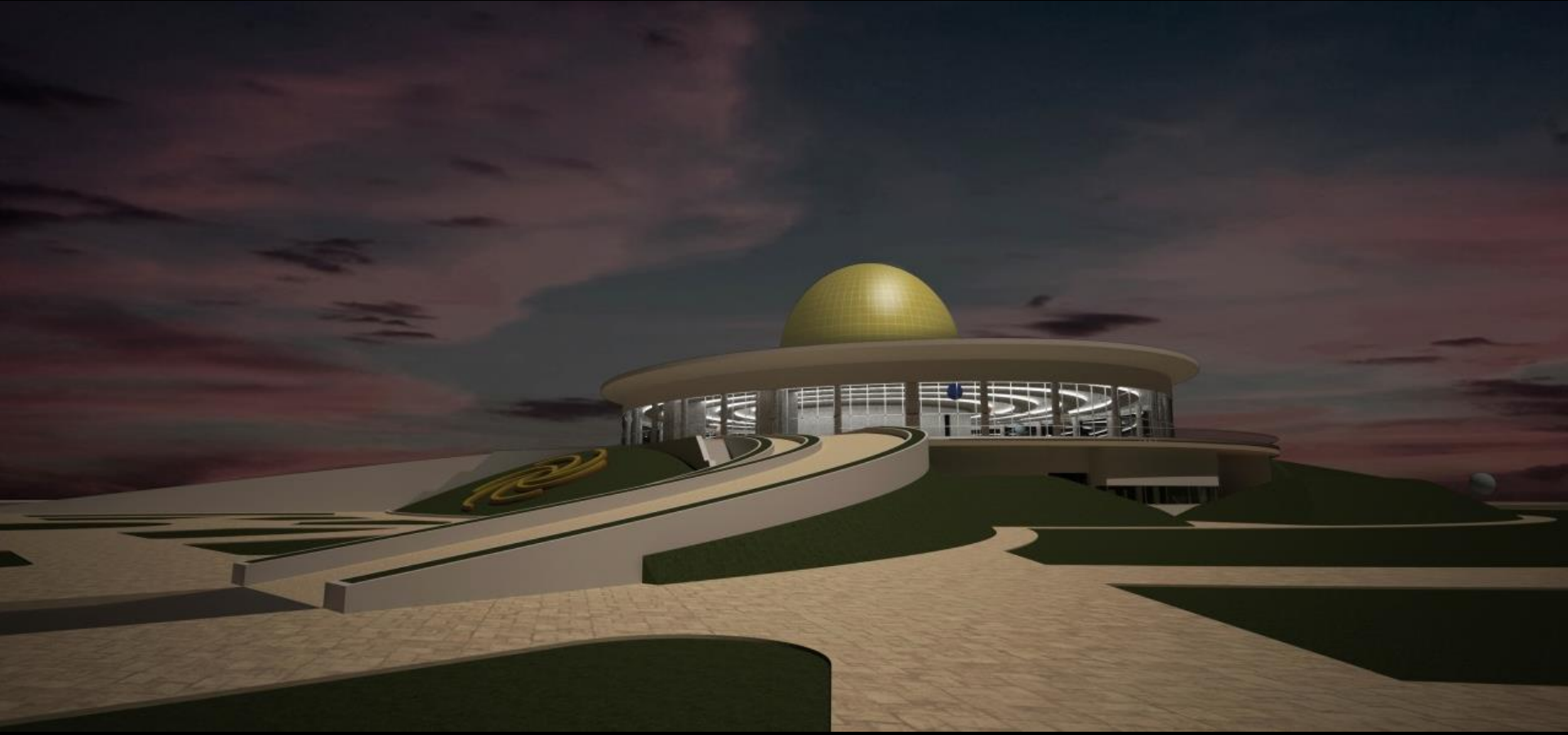
President of the University of Sharjah

Depicts the dome as representing the sun in the middle of the Centre surrounded by planetary bodies in orbit to form the solar system as seen in the sky.









October 3<sup>rd</sup>, 2013



December 7<sup>rd</sup>, 2013





**UNEC**  
**SAFETY FIRST**

- اللبس الخوذة  
WEAR HELMET  
هلمت پہرنا
- اللبس الحذاء  
WEAR BOOTS  
بوتس پہرنا
- ممنوع التدخين  
NO SMOKING  
سہانہ نہ ہونا
- اللبس حزام الأمان  
WEAR SAFETY BELTS  
بوسہ پہرنا
- اللبس النظارات الواقية  
WEAR GOGGLES  
سہانہ پہرنا
- اللبس قفازات  
WEAR GLOVES  
ہتھیانہ پہرنا
- اللبس اللباس الموحد  
WEAR UNIFORM  
بہرہت پہرنا
- اللبس قناع الغبار  
WEAR DUST MASK  
سہانہ پہرنا

































15<sup>th</sup> November, 2014









# The Moon

## Constant Moon

The Moon is Earth's only natural satellite and the only celestial body that orbits Earth. It is the only celestial body in the solar system that is visible to the naked eye. The Moon is the only celestial body in the solar system that is visible to the naked eye.

## Contrasting Moon

The Moon is the only celestial body in the solar system that is visible to the naked eye. It is the only celestial body in the solar system that is visible to the naked eye.

## Cratered Moon

The Moon is the only celestial body in the solar system that is visible to the naked eye. It is the only celestial body in the solar system that is visible to the naked eye.



Hole

the ozone layer,  
from the Sun

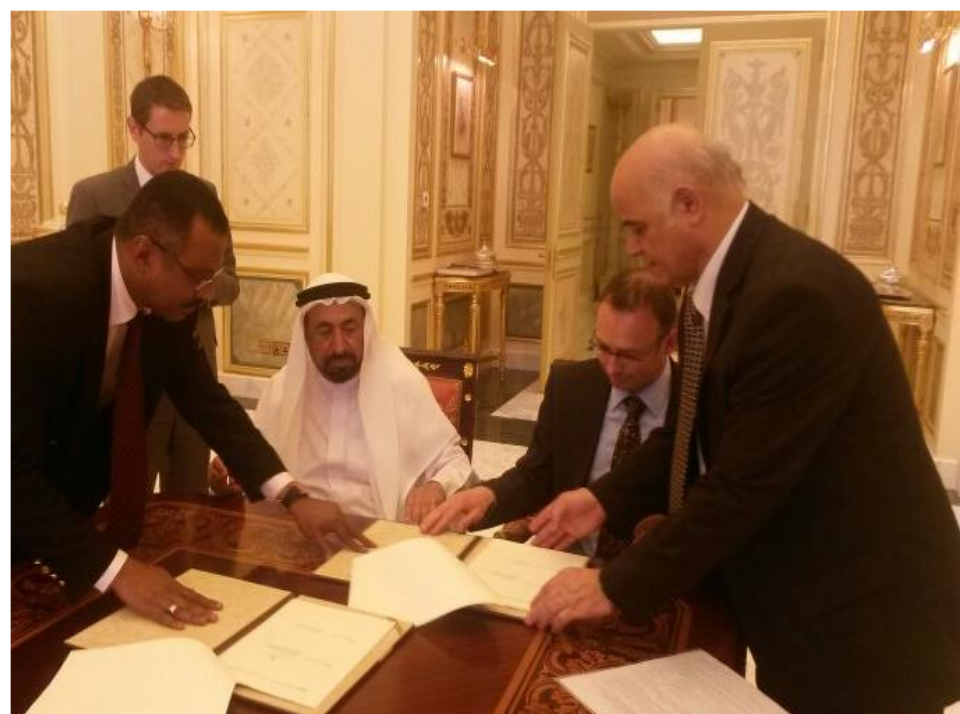
### Deep Ocean Currents

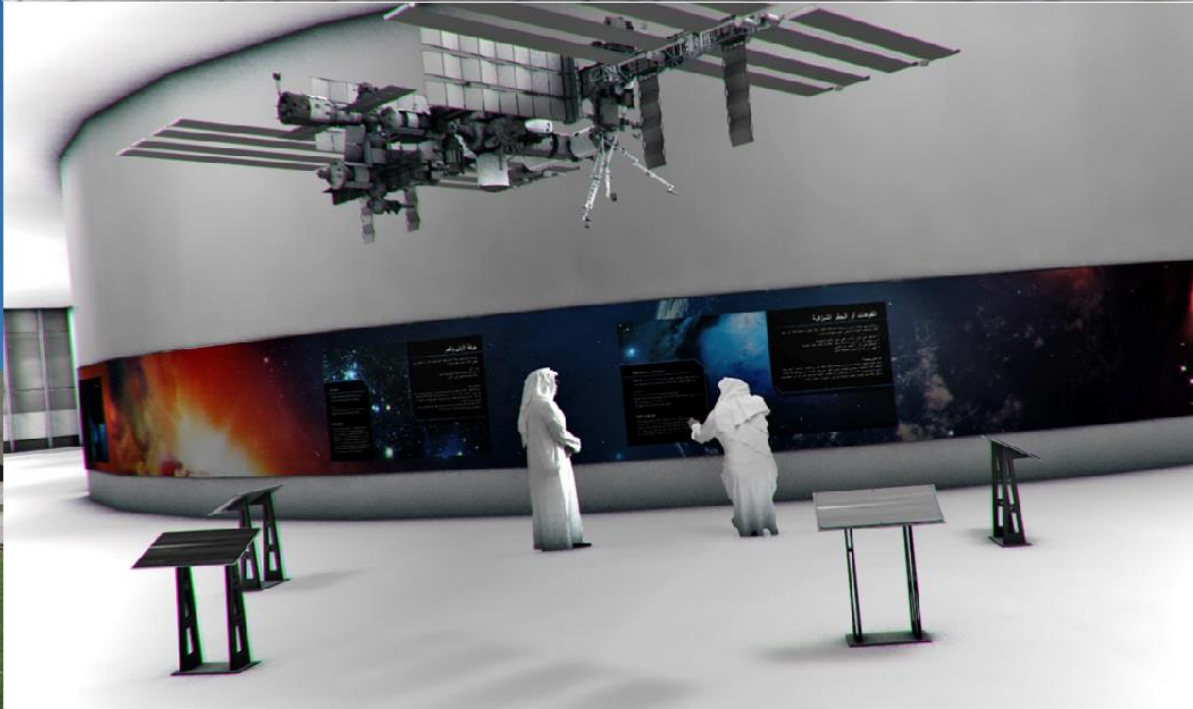
From space we can monitor the deep ocean currents,  
which transport the Sun's energy around the globe

THE OZONE LAYER


















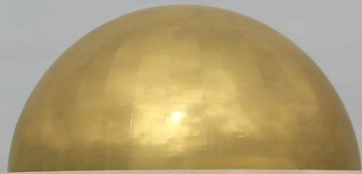
PLANETARIUM  القبة الفلكية





PLANETARIUM  القبة الفلكية





PLANETARIUM القبة الفلكية





PLANETARIUM

القبة الفلكية



























# Future of SCASS

1metre Optical Telescope in Wadi Al-  
Helo

+ 20metre Radio Telescope

**THANK YOU**