

Time - UNIVERSAL GALLERY (Room overview)

THE UNIVERSAL GALLERY can be found on the ground floor of MOD.

## **DIGITAL SIGNAGE BOX (DSB)**

### **Can we control time?**

Is time what it seems?

The tick-tock of a clock can make us feel secure that time is fixed and regular.

But many things affect our perception of time passing, as well as how we measure time. What can we observe, and what can we control?

Approximately 10m to the east, you are at the entrance to the Universal gallery, white text on the black concrete floor reads: *CAN WE CONTROL TIME?*

## **ARTISTS - Credits**

QUT - touchscreen interactive

## **CONTENT WARNING**

All exhibits in this gallery have an interactive component and if you would like support or assistance, please seek a moderator.

## **ACCESS SEATING**

As you enter the Universal gallery a cluster of various sized round leather seats are positioned on the right-hand side of the gallery.

A soundtrack plays.

## **Delve Deeper**

A day is the time it takes for the earth to spin about its axis and for the Sun to appear in the same spot in the sky again. Typically, the length of time it takes to do that is 24 hours, give or take. That give or take is actually very important. Since ancient times, astronomers have known that using the Sun's movement to measure time doesn't give consistent results. Days are longer in Summer when we get more hours of sunlight. In calculating the length of a solar day, we must also take into account that

the Sun appears to change position in the sky as the Earth orbits. But this assumed that the rotation of the earth was constant.

It wasn't until the 19th century that scientists were able to accurately determine that the rotation of the earth was not, in fact, constant. It is constantly changing due to a huge variety of factors. In the context of deep time, we can use information from the growth rate of corals to know that millions of years ago a day was only 22 hours long. So what causes the spin of the Earth to slow down or speed up?

### Artwork highlight (Complex artwork)

You explore this in our touchscreen game, Earth Time. You visit different Time Temples that represent factors scientists know change the speed of the rotation of the Earth:

#### **Subterranean Temple**

The movement of the earth's solid core and liquid mantle can slow down or speed up rotation. e.g. the continents drifting north will speed up rotation of the earth.

#### **Polar Temple**

Climate change can change the speed of rotation. Melting ice sheets shift mass away from the poles to the equator, slowing the earth down (like a ice skater throwing out their arms to slow a spin).

#### **Ocean Temple**

The moon and its effect on the tides is one of the biggest impacts on earth rotation. The Moon pulls on the oceans creating tidal bulges. The friction between tides and the ocean floor acts like a brake, slowing us down and making the day longer.

#### **Mountain Temple**

Earthquakes can shift the distribution of mass which changes Earth's rotational speed. Even atmospheric patterns like La Nina results in a speed increase. As the prevailing wind pushes on Mountain ranges like the Andes, this acts like a sail to increase the Earth's rotation speed.

#### **Space Temple**

Einstein told us that all time is relative! How fast you're going, and how much gravity you're experiencing all effect time.

The faster you travel, the slower you experience time. The more spacetime is curved by gravity (the nearer you are to a massive thing) the slower time goes (General Relativity). The theory of Special Relativity tells us that you experience time faster the further you are from earth. These effects are small but incredibly important for GPS -

if we didn't take these into account GPS wouldn't function. GPS satellites need to have their clocks set slower on earth so they will be synchronised in orbit.

The Time Keeper sends you on a journey to try and align Earth's rotation to match atomic time. Visit the five Time Temples and solve puzzles that represent the factors that change the speed of the Earth's rotation. Move lava, melt and shift ice, drag the tides, direct the wind and control gravity. Can it even be done, or will the Time Keeper need to learn that natural cycles and cosmic rhythms are just as crucial as atomic accuracy?

## **ABOUT CAN WE CONTROL TIME?**

Hey...you there! Apprentice!

We have a crisis on our hands and the Time Keeper, Clockwork Larry, needs your help. Everyone knows there's 24 hours in a day right? But the Time Keeper's atomic clock is out by one whole second! This is a disaster.

The five Time Alignment Temples are what keep everything stable. But something's disrupting them, and we need to act fast.

Your job is to visit each Time Alignment Temple control panel and use your puzzle-solving skills to try and align Earth's rotation to match atomic time. By directing lava in the Subterranean Temple, melting and shifting ice in the Polar Temple, or dragging tides caused by the moon at the Ocean Temple, you will change the speed of the Earth's rotation.

Now get moving and embark on this chrono-crusade before time runs out! You'll need to stabilise the temple time zones before people are saying, 'Is it breakfast time or bed time?'