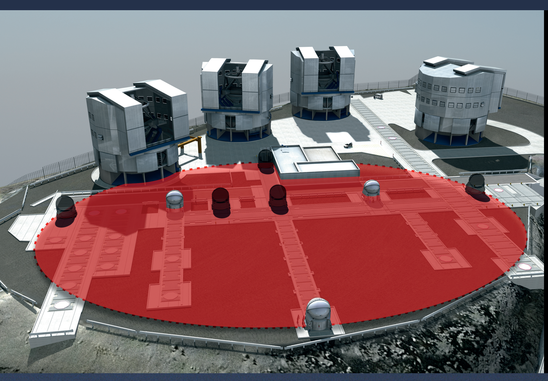
The Very Large Telescope Interferometer (VLTI)

Each of the individual telescopes that make up the VLT uses one large mirror to capture light from the skies. The combination of light from two or more of these telescopes pointed at the same object allows astronomers at the VLT to study objects in even greater detail. This is the Very Large Telescope Interferometer (VLTI).

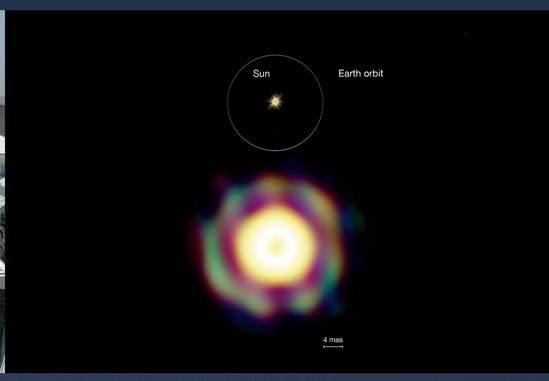
The Very Large Telescope's four 8.2-metre Unit Telescopes (UTs) and the four 1.8-metre Auxiliary Telescopes (ATs) make up the light-collecting elements of the VLTI. The UTs are fixed in position, but the smaller ATs can be moved between 30 different stations.

A complex system of mirrors brings the light from the different telescopes to the instruments, where it is combined. This enables the instruments to distinguish details that would otherwise require a telescope with a diameter equal to the distance between the actual telescopes used. For the Unit Telescopes, this gives an equivalent diameter of up to 130 metres, and when combining the Auxiliary Telescopes, equivalent diameters of up to 200 metres can be achieved.

The VLTI gives astronomers the ability to study celestial objects in unprecedented detail. It is possible to see details on the surfaces of stars, to determine the shapes of asteroids or even to study the surroundings of black holes.



Using interferometry, the VLTI provides astronomers with vision as sharp as that from a giant telescope with a diameter equal to the largest separation between the telescopes used.



This image from ESO's VLTI is one of the sharpest colour images ever made. It shows the star T Leporis in great detail. The central disc is the surface of the star, which is surrounded by a spherical shell of molecular material expelled from the star. This is a staggering achievement: the star appears as small on the sky as a two-storey house on the Moon would from Earth. Credit: ESO/J.-B. Le Bouquin et al.

www.eso.org/vlt

03.2012

Background image: The Paranal platform.
Credit: ESO/H.H. Heyer