



<p>ESOCast Episode 70: Green Light for E-ELT Construction</p>	
<p>00:00 [Visuals start]</p> <p>1. The European Extremely Large Telescope — or E-ELT for short — will be by far the largest optical and near-infrared telescope in the world.</p> <p>In early December 2014 the ESO Council gave the go-ahead for the first construction phase of the telescope.</p>	<p>00:00 [Visuals start]</p> <p>E-ELT animation</p>
<p>00:27 ESOCast intro</p> <p>2. This is the ESOCast! Cutting-edge science and life behind the scenes of ESO, the European Southern Observatory.</p>	<p>00:00</p> <p>ESOCast introduction</p>
<p>00:46 [Narrator]</p> <p>3. Astronomy has reached a point where bigger telescopes — much bigger telescopes — are essential to address many of the important unanswered questions.</p> <p>For nearly a decade ESO has been working together with its user community of European scientists to design such a new giant — the E-ELT.</p>	<p>Night Timelapses</p> <p>ESO Headquarters, meetings</p>
<p>01:14 [Narrator]</p> <p>4. The decision of the ESO Council means that crucial contracts including those for the construction of the dome and the telescope structure can be awarded according to plan.</p>	<p>ESO engineers</p>

<p>01:27 [Narrator] 5. The E-ELT will have a main mirror 39 metres across. It will collect 13 times more light than any other optical telescope today.</p> <p>This main mirror will not be a single mirror. Instead it will consist of 798 hexagonal mirror segments, each about 1.4 metres across but only 5 centimetres thick.</p>	<p>E-ELT mirror animation</p> <p>Mirror segments footage</p>
<p>01:56 [Narrator] 6. The E-ELT has an unusual optical design using five mirrors. This includes advanced adaptive optics that correct for the fuzziness of astronomical images that is caused by atmospheric turbulence.</p> <p>Adaptive optics are already in use at ESO's Very Large Telescope. By using this technique the E-ELT will be able to produce images up to 15 times sharper than those from the Hubble Space Telescope</p>	<p>E-ELT animation</p> <p>Adaptive optics animation</p> <p>VLT footage</p> <p>E-ELT animation with laser guide star system</p>
<p>02:32 [Narrator] 7. The E-ELT will feature a suite of state-of-the-art science instruments to capture the light that the telescope collects.</p>	<p>Still images of instruments on the Nasmyth platforms</p>
<p>02:44 [Narrator] 8. The dome of the E-ELT is an exercise in superlatives. With a height of 74 metres and a diameter of 86 metres, it simply dwarfs any existing telescope enclosure.</p>	<p>E-ELT animation</p>
<p>03:01 [Narrator] 9. The perfect future home for the E-ELT has been found on the summit of Cerro Armazones, a 3000 metre high mountain, only 20 kilometres from ESO's Paranal Observatory in northern Chile.</p>	<p>Cerro Armazones</p>
<p>03:19</p>	

<p>[Narrator] 10. On 19 June 2014, part of the peak of Cerro Armazones was blasted away as an initial step towards levelling the summit.</p> <p>Since then the work on the mountain, as well as the road from Paranal to Armazones, has progressed well.</p> <p>The construction of the telescope itself will take about a decade.</p>	<p>Armazones summit blasting</p> <p>Work on mountain and road construction</p>
<p>03:53 [Narrator] 11. Once in operation the E-ELT will tackle some of the biggest scientific challenges of our time.</p> <p>It will image planets around other stars and study their atmospheres, looking for biosignatures.</p>	<p>E-ELT animation</p> <p>Exoplanet animation</p>
<p>04:15 [Narrator] 12. The E-ELT will also make fundamental contributions to cosmology by measuring the properties of the first stars and galaxies in the Universe and by probing the nature of the mysterious dark matter and dark energy.</p> <p>On top of this astronomers are also in a way, expecting the unexpected — surprising results that cannot be anticipated today.</p>	<p>Distant galaxies</p> <p>Dark matter animation</p> <p>Galaxy fly-through animation</p> <p>Animation of nebula</p>
<p>04:47 [Narrator] 13. The European Extremely Large Telescope will represent a gigantic leap in our ability to observe the Universe around us. The world's biggest eye on the sky will lead to a wealth of new discoveries and it will revolutionise many areas of astronomy.</p> <p>This marks the dawn of a new era.</p>	<p>E-ELT animation</p>
<p>05:12 [Outro]</p>	<p>ESOCast is produced by ESO, the European Southern Observatory.</p> <p><i>ESO builds and operates a suite of the world's most advanced ground-based</i></p>

	<i>astronomical telescopes.</i>
--	---------------------------------