ESOcast Episode 48: Building Big **Special 50th anniversary episode #8**		
00:00 **[Visuals start]**		**Images:**
00:50 **[Narrator]** 1. Astronomy is big science.		Animation of supernova or gamma burst detonation, or other display of powerful/energetic phenomenon
00:55 **[Narrator]** 2. It's a vast Universe out there, and the exploration of the cosmos requires huge instruments.		Cosmic scenes
01:05 **[Narrator]** 3. This is the 5-metre Hale reflector on Palomar Mountain. When the European Southern Observatory came into being, fifty years ago, it was the largest telescope in the world.		Footage of Hale reflector
01:20 **[Narrator]** 4. ESO's Very Large Telescope at Cerro Paranal is the state of the art now.		Timelapse video of VLT
01:27 **[Narrator]** 5. As the most powerful observatory in history, it has revealed the full splendour of the Universe in which we live.		Paranal (VLT and Auxiliary Telescopes) timelapse
01:35 **[Narrator]** 6. But astronomers have set their sights on even bigger instruments. And ESO is realising their dreams.		Inside the dome of VLT, timelapse

01:58 **[Narrator]** 7. San Pedro de Atacama. Tucked amidst breathtaking scenery and natural wonders, this picturesque town is home to indigenous Atacameños and adventurous backpackers alike.		Footage of San Pedro Valle de la Luna, El Tatio, Salar, etc Nice location in San Pedro. Dr J walking on Caracoles. View of backpackers; San Pedro atmosphere.
02:14 **[Narrator]** 8. And ESO astronomers and technicians.		Dr J walking into patio of Adobe restaurant, where group of astronomers is sitting/drinking/talking
02:24 **[Dr J]** 9. Not far from San Pedro, ESO's first dream machine is taking shape.		Dr J standing, OSF in the distance behind him.
02:28 **[Dr J]** 10. It's called ALMA – the Atacama Large Millimeter/submillimeter Array.		Dr J standing, OSF in the distance behind him.
02:35 **[Dr J]** 11. ALMA is a joint project of Europe, North America and East Asia.		Dr J at Chajnantor in front of ALMA antennae.
02:40 **[Dr J]** 12. It operates like a giant zoom lens. Close together, the 66 antennas provide a wide-angle view. But spread apart, they reveal much finer detail over a smaller area of sky.		Dr J at Chajnantor. Much wider view of compact array; many dishes visible. CG will be shown also (during second part of text) to illustrate different observing modes of ALMA
02:56 **[Dr J]** 13. At submillimetre wavelengths, ALMA sees the Universe in a different light.		Dr J at Chajnantor.
03:00 **[Dr J]** 14. But what will it reveal?		Dr J at Chajnantor.
03:03 **[Narrator]** 15. The birth of the very first galaxies in the Universe, in the wake of the Big Bang.		Animation of primordial galaxies

03:12 **[Narrator]** 16. Cold and dusty clouds of molecular gas — the stellar nurseries where new suns and planets are born.		Animation of star and planet formation
03:22 **[Narrator]** 17. And: the chemistry of the cosmos. ALMA will track down organic molecules — the building blocks of life.		Animation of astrochemistry and nebulae
03:37 **[Dr J]** 18. Construction of the ALMA antennas is in full swing.		Dr J at OSF; construction work going on (unfinished dishes)
03:43 **[Dr J]** 19. Two giant transporters, called Otto and Lore, take the completed antennas up to the Chajnantor Plateau.		Dr J with transporter+antenna driving up to Chajnantor
03:56 **[Dr J]** 20. At 5000 metres above sea level, the array provides an unprecedented view of the microwave Universe.		Dr J's voice, with timelapse of ALMA during night.
04:10 **[Dr J]** 21. While ALMA is nearly completed, ESO's next dream machine is still a few years away. See that mountain over there? That's Cerro Armazones.		Dr J at VLT platform, pointing towards Armazones. Camera zooms in on remote mountain
04:22 **[Dr J]** 22. Not far from Paranal, it will be home to the largest telescope in the history of mankind.		Zoom in Armazones, animation of E-ELT
04:30 **[Dr J]** 23. Meet the European Extremely Large Telescope. The world's biggest eye on the sky.		Impressive computer animations of E-ELT
04:43 **[Narrator]** 24. Sporting a mirror almost forty metres across, the E-ELT simply dwarfs every telescope that preceded		More computer animations

it.		
04:53 **[Narrator]** 25. Almost eight hundred computer-controlled mirror segments.		Close-up of mirror segments
04:58 **[Narrator]** 26. Complex optics to provide the sharpest possible images.		View of E-ELT mirrors / corrector unit
05:04 **[Narrator]** 27. A dome as tall as a church steeple.		Views of dome, showing huge size
05:13 **[Narrator]** 28. The E-ELT is an exercise in superlatives.		More overview images of E-ELT
05:20 **[Narrator]** 29. But the real wonder, or course, is in the Universe out there.		Night views of E-ELT w lasers
05:30 **[Narrator]** 30. The E-ELT will reveal planets orbiting other stars.		Images of orbiting exoplanets
05:38 **[Narrator]** 31. Its spectrographs will sniff the atmospheres of these alien worlds, looking for biosignatures.		Closeup of exoplanet atmosphere
05:48 **[Narrator]** 32. Further away, the E-ELT will study individual stars in other galaxies. It's like meeting the inhabitants of neighbouring		Views of distant galaxies
06:00 **[Narrator]** 33. Working as a cosmic time machine, the giant telescope lets us look back billions of years, to learn how everything began.		Deep field images, zooming in on individual galaxies

06:12 **[Narrator]** 34. And it may solve the riddle of the accelerating Universe — the mysterious fact that galaxies are pushed away from each other faster and faster.		Animation showing a 3D map of the Universe
06:33 **[Dr J]** 35. Astronomy is big science. And it's a science of big mysteries.		Dr J closeup, outside in desert
06:38 **[Dr J]** 36. Is there life beyond Earth? What's the origin of the Universe?		Dr J closeup, outside in desert.
06:43 **[Dr J]** 37. ESO's new monster telescope will help in our quest to understand.		Zoom out from Dr J to reveal Cerro Armazones in background
06:49 **[Dr J]** 38. We're not there yet, but it won't take long.		E-ELT appears on the mountaintop in view behind Dr J
06:53 **[Narrator]** 39. So what's next? Well, no one knows.		
06:56 **[Narrator]** 40. But ESO is ready for the adventure.		Zooming in on E-ELT on the top of the mountain.
07:30		**[Outro]**

08:36 END