**MOON VILLAGE - A-ROLL**

TAPE STARTS: 10:00:00

A-ROLL STARTS: 10:00:10

10:00:10

**[**MOON BASE ANIMATION]

Living and working on the Moon may sound like science fiction, but the head of the European Space Agency wants to make this ambitious idea a reality - a permanent lunar base. Or, as he calls it, a Moon village. But unlike any village you might find on Earth.

10:00:30

[Inset clip: JOHANN-DIETRICH WOERNER

Director General, ESA]

*“In a Moon village we would like to combine the capabilities of different space faring nations…”*

10:00:34

[ANIMATION ROBOTIC VEHICLE ON LUNAR SURFACE]

[OOV] *‘’be it robotic or be it human, to look also for different activities…”*

10:00:40

[Inset clip]

*“…be it pure science, but be it also business, even tourism, or mining or whatever, to put them together on the same place, and this is the idea of the Moon village.”*

10:00:52

[MOON FOOTPRINT STILL. ANIMATION OF FLYING ABOVE MOON AND INTERNATIONAL SPACE STATION]

It’s been almost 50 years since man first walked on the lunar surface and the end of the Apollo programme. But now, for many people, a permanent base is the next logical step following the cooperation of countries from all over the world for the International Space Station.

10:01:10

[ANIMATION ROBOTIC VEHICLE AND 3D PRINTING ON THE MOON. Credit: Foster + Partners]

One key thought is to use the Moon’s own natural resources to build and sustain a base - its water ice, metals, and minerals - using its own materials to 3D print a structure or building element.

10:01:25

[ANIMATION INFLATABLE DOME AND COVERING WITH LUNAR MATERIAL Credit: Foster + Partners]

A rover could land on the surface, inflate a dome and the rovers could begin to construct a building to protect the astronauts. And while a Moon village is a big project, it can start small.

-10:01:40

[Inset clip: JOHANN-DIETRICH WOERNER

Director General, ESA]

*“The advantage of the idea of Moon village is that we don’t need a big amount of funding at the beginning. We don’t have to define everything and just to say ok we build a big structure. The idea is that the different actors, the different players worldwide, they look in their special capabilities, their special interests, and they bring just their small part into the idea.*

10:02:03

[ANIMATION ESA LUNAR LANDER DESCENDING TO SURFACE]

[OOV] “*That means we can start with a small landing mission, which many countries are already planning, up to some huge investment for instance for some telescope, radio telescope, on the far side of the Moon. So it’s multiple uses by multiple users but a single place.”*

10:02:22

[ANIMATION MICROMETEORTIES AND RADIATION. Credit: Foster + Partners. MOON STILLS]

But there are hazards to consider - such as solar and cosmic radiation, micro-meteorites and extreme temperatures. And so the ESA director general believes that areas near the poles or in constant daylight would be the most suitable on the far side of the Moon.

10:02:40

[ANIMATION ESA LUNAR LANDER ABOVE THE MOON]

[OOV]

*“We have places on the Moon which are, at least especially at the South Pole, which has permanent darkness, where we can find water, and we know from some missions that there is water.*

10:02:52

[INSET CLIP]

*“Water is a good source to produce hydrogen and oxygen. And also to go into the shadow of the Moon we will have places where we don’t have the radiation coming from the Earth, so building a telescope over there…*

10:03:07

[ANIMATION LUNAR DOME & ROBOTIC ROVER. Credit: Foster + Partners. MOON STILLS]

[OOV]

“*… by using the material we find on the Moon, so not bringing all the stuff from the Earth, that could also open new possibilities to look deep into our universe.”*

10:03:17

[ISS SHOTS AND ASTRONAUTS]

The idea is that the Moon base would be a global project, a natural new step, emulating how the International Space Station works.

10:03:26

[INSET CLIP]

*“We have more than 60 space faring nations around our world, and the Americans are now saying journey to Mars.”*

10:03:34

[MARS STILL]

[OOV] “*And I totally agree that it’s right. Humans will go to Mars one day, but this is a little bit far away in the future.”*

[INSET CLIP]

*“So also the Americans are interested in the Moon. So it will be the Americans, it will be the Russians, it will be the Chinese, it will be the Indians, the Japanese, and even more countries with smaller contributions. So my hope is that we will really have a really global exploration scheme on the Moon.”*

10:04:00

[MOON BASE ANIMATION AND MOON STILL]

The head of ESA’s commitment to a Moon village sends a powerful message, although it could be 20 years before the technology is ready to make it happen. But as more nations plan to return to the Moon, the need for a permanent base will grow - and Europe could be at the heart of the next giant leap for humankind.

10:04:22

[END A-Roll]

INTERVIEW

JOHANN-DIETRICH WOERNER, Director General, ESA

10:08:36

ANIMATION, Moon Village Construction

10:11:08

ANIMATION, Moon Village

10:11:41

END

**Moon Village B-roll**

**Interview**

**Johann-Dietrich Woerner**

**Director General, ESA [English]**

*“In a Moon village we would like to combine the capabilities of different space faring nations, be it robotic or be it human, to look also for different activities, be it pure science, be it also business, even tourism, or mining or whatever, to put them together on the same place, and this is the idea of the Moon village.”*

*“The advantage of the idea of Moon village is that we don’t need a big amount of funding at the beginning. We don’t have to define everything and just to say ok we build a big structure. The idea is that the different actors, the different players worldwide, they look in their special capabilities, their special interests, and they bring just their small part into the idea. That means we can start with a small landing mission, which many countries are already planning, up to some huge investment for instance for some telescope, radio telescope, on the far side of the Moon. So it’s multiple uses by multiple users but a single place.”*

*“We have places on the Moon which are, at least especially at the South Pole, which has permanent darkness, where we can find water, and we know from some missions that there is water. Water is a good source to produce hydrogen and oxygen. And also to go into the shadow of the Moon we will have places where we don’t have the radiation coming from the Earth, so building a telescope over there by using the material we find on the Moon, so not bringing all the stuff from the Earth, that could also open new possibilities to look deep into our universe.”*

*“We have more than 60 space faring nations around our world, and the Americans are now saying journey to Mars, and I totally agree that it’s right. Humans will go to Mars one day, but this is a little bit far away in the future. So also the Americans are interested in the Moon. So it will be the Americans, it will be the Russians, it will be the Chinese, it will be the Indians, the Japanese, and even more countries with smaller contributions. So my hope is that we will really have a really global exploration scheme on the Moon.”*

*“If I say Moon village that means not for me some single houses, a church, a city hall and so on. No, it means for me what a village is. A village is that some people are doing together some work, defining some place for different activities.”*

*“The first step is already done. The first step is that we are discussing it and there are several member states of ESA, but also outside ESA, which are interested in doing some missions to Moon. So we have also from ESA we have a cooperation together with the Russians for some Moon landing ideas. So all of these now have to be in a further discussion process, come together. So it has started already. I don’t say that the Moon village is the end of the story, the Moon village is just the next step, you could call it a pit stop to further explore our universe.”*

*“My intention is to build up a permanent base station on the Moon. Meaning that it’s an open station, for different member states, for different states around the globe. We have so many spacefaring nations, they should combine their efforts for exploration, because of mainly two reasons - if you are working together you can do better, and the other thing is working together is bridging earthly problems. And therefore the Moon village should be the idea to bring together different capabilities, different interests, but one single place - that’s the Moon.”*

**Animation**

**Moon village construction**

Credit: Foster + Partners

**Animation Moon village**

Scanning shot above the Moon’s surface, over a base, and beyond. Credit: ESA.