**19 January 2024 / Buy me to the moon**

**[HALF SECOND OF SILENCE]**

**[BILLBOARD]**

NOEL: Lawmakers convened on Capitol Hill this week to politely but definitively put the screws to NASA.

SCORING IN — The Other Side of the Beat (APM)

*<CLIP> Chairman Frank Lucas: “Last week NASA announced the delay of Artemis 2 to September 2025 and Artemis 3 to 2026. I look forward to hearing from NASA about the cause of these delays FADE DOWN HERE”*

NOEL: The Artemis missions will return man, and woman this time, to the moon. The U.S. has competition: from Chinese astronauts, from an UNMANNED Japanese craft that moon-landed literally today.

*<CLIP> JAPAN AEROSPACE EXPLORATION AGENCY: it looks like… it has reached… on the moon…*

NOEL: This modern space race is very expensive. So NASA is turning to the commercial space sector that’s dominated by powerful CEOs: your Elon Musks and your Jeff Bezoses. They strike out too - an American company’s moon lander crashed just this week - but they can AFFORD It.

NOEL: The race for the moon: coming up on Today, Explained.

*<CLIP> “To the moon!”*

**[THEME]**

NOEL: I’m Noel King. Chris Davenport covers NASA and the space industry for the Washington Post. He’s been covering the big space news, which, if you haven’t been following closely, is that the US is planning to go BACK to the moon. So, how’s that going?

CHRIS: So this was actually a plan, uh, called Artemis that was born during the Trump administration, where they decided they wanted to focus NASA on returning astronauts to the moon, under the Obama administration, it had been this journey to Mars…

*<CLIP> NASA VIDEO: President Barack Obama: I understand that some believe we should attempt to return to the surface of the moon first as previously planned. But I just have to say …pretty bluntly here… we’ve been there before…*

CHRIS: And the Trump administration came in and said, no, we want to we want to go back to the moon…

*<CLIP> PBS NEWSHOUR:*

*President Donald Trump: We’re dreaming big. This is a giant step toward that inspiring future and toward reclaiming America’s proud destiny in space.*

CHRIS: And NASA's initial plan was to get astronauts there by 2028. The Trump administration came and said, no, we want to do that by 2024, this incredibly ambitious timeline that few thought was actually possible, and as it turns out, it was not possible. But what was significant is that the Biden administration embraced the Artemis program. And that is the first time you have had subsequent presidential administrations embrace, uh, a moon mission or a deep space human spaceflight mission since the Apollo era.

*<TAPE> President Joseph Biden: The mission you’re about to go on, the United States can return people to the moon – is hard to believe for the first time in over 50 years – and the worst part is I can remember exactly where I was when they announced that man landed on the moon. Doesn’t mean I’m old, means you guys are moving quickly.*

CHRIS: So they did keep the Artemis program, which is a big deal. But the timeline, however, is changing. And they came in and said initially 2024 is not feasible. Uh, we're going to hope to do it by 2025. Now, as we know, just recently they announced, uh, that's going to, uh, slip somewhat significantly.

*<CLIP> NASA VIDEO:*

*NASA Administrator Bill Nelson: So what I want to tell you is, we are adjusting our schedule to target Artemis II for September of 2025, and September of 2026 for Artemis III, which will send humans for the first time to the lunar south pole.*

CHRIS: There's going to be the next mission, which will have four astronauts in the Orion capsule in the spacecraft, and it will fly around the moon, and it won't land on the moon, it'll fly around it, and that is being pushed back to September of next year, and the lunar landing, uh, about a year after that, showing just how difficult these missions can be.

NOEL: Man has been to the moon, Joe Biden and President Trump were both alive for it. Why, If we've been there and we've done it, are these two successive presidents who run the United States government, why are they so keen to get us back to the moon?

CHRIS: The moon today in some ways is not the moon that we visited in the late 60s and early 70s during the Apollo era.

SCORING IN EMERALDS (APM)

*<CLIP> CBS NEWS ARCHIVE:*

*Neil Armstrong: Tranquility Base here, the eagle has landed.*

*Houston: Roger Tranquility, we copy you on the ground, you got a bunch of guys about to turn blue we’re breathing again, thanks a lot*

*Walter Cronkite: <<laughs>>*

CHRIS: What we know about it today is that, uh, it's not dry. There's water on the moon. There is water in the form of ice at the poles of the moon, particularly in the south pole of the moon, and so that's where NASA, and the white House wants to go. And water is important because it's not just, um, a water to drink, and if you can break it up, oxygen to breathe, but the component parts, hydrogen and oxygen can also be used as rocket fuel. Um, and if you can mine the water and then separate the parts, um, that is a very big deal that could allow, uh, broader exploration of the solar system and particularly getting to Mars. The other thing that's different now, it's not just the United States. Um, I mean, we have this Cold War space race during Apollo with the Soviet Union…

*<CLIP> NASA VIDEO:*

*President John F. Kennedy: The dramatic achievement in space should have made clear to us all, as did the Sputnik in 1957, the impact of this adventure on the minds of men everywhere who are attempting to make a determination on which road they should take.*

CHRIS: …now it's with China. And, uh, because of the presence of water and because of the presence of other resources there, both countries want to set up a more permanent presence and really stay there and build a base and an enduring presence in order to, uh, take advantage of the resources there, which, again, is very different from Apollo, where we went the astronauts stayed for a couple of days and then they left and they came home, and now they want to go and really go, but to stay.

SCORING OUT

NOEL: When NASA does send astronauts to the moon as it's planning to do, what is that mission going to look like?

CHRIS: Well, the first mission, um, you know, will be something, uh, similar to the previous ones…

*<CLIP> NASA VIDEO:*

*The space launch system is now on its maiden voyage to the moon. And here we go… 7..6..*

CHRIS: because that first mission won't be an enduring one. The astronauts will go and they will come home. They need to test out the hardware. But what will be significant about it is while the, uh, rocket and the spacecraft that get the astronauts to the moon, the lunar lander, the spacecraft that they'll transfer to to get them to the surface of the moon won't be owned and operated by NASA. It'll be owned and operated by a private company. On the first mission, it'll be, uh, space-x, which is obviously, uh, Elon Musk's company.

*<CLIP> ELON MUSK: In order for the Artemis program to succeed, we must succeed with Starship. Like I said, we actually want to far exceed what NASA’s asked us to do.*

CHRIS: NASA is trying to harness the growing capability in the commercial space sector. And so, uh, SpaceX won that contract to build the spacecraft known as Starship, to, uh, ferry astronauts to and from, uh, the lunar surface. And, um, on subsequent missions, I won't just be SpaceX. It'll be Blue Origin, which is Jeff Bezos’s company.

*<TAPE> Jeff Bezos: The lunar lander we’re developing for NASA, the Mark II lander, that’s part of the Artemis program, they call it the sustaining lander program.*

CHRIS: Um, because they've also won a contract to build a lander capable of taking astronauts, um, to the moon. And this is the way, actually, NASA's been going for some time, building out these public private partnerships. Um, it started with, uh, flying cargo and supplies to the International Space Station and science experiments. Not people, um, but but payloads and cargo, uh, that evolved into flying cargo to flying people to the International Space Station. And SpaceX does that now. And Boeing also, uh, has a contract to do that. They haven't been able yet to fly astronauts there, but Boeing is working on it, and its first flight could come as soon as April. Um, and now they're extending that paradigm all the way out to the moon and having these public private partnerships, because, you know, we've got this growing commercial space sector that we just did not have.

NOEL: So when the rocket goes up, I'm thinking of the rocket going up into the air. And for whatever reason, I can see in my brain the rocket has NASA written on the side of it. Um, you're saying the rockets will be owned by private companies? Is it going to have, like, Space-x written on the side instead of NASA?

CHRIS: Well, it depends on which rocket. It depends on which mission. In the Artemis program, the program going to the moon, um, you have a mix of the old and the new. The rocket that will take off, uh, from Earth is NASA's rocket. It's called the Space Launch System. Uh, it is owned and operated by NASA and is built, um, by taxpayers. The rocket or the spacecraft, rather, that will meet up with the astronauts in orbit around the moon and then take them down to the surface and then take them back off the surface. And that will be a commercial spacecraft. Um, so and that's what's so interesting. And you see the evolution of these programs and where and the Artemis Moon missions, they're sort of combining both types of systems.

NOEL: Do you think there's any danger in the private sector playing such a large role in, in space travel and space flight? Working so closely with NASA?

CHRIS: Yeah. I mean, you've got a lot of power right now in the hands of a few companies, and that's a concern. I mean, particularly if those companies were to go away, that capability, which NASA needs, um, would be lost. Um, part of the problem is that it's dominated in large part by SpaceX. SpaceX is the only way that NASA is able to fly its astronauts to the International Space Station, um, you know, for a long time, we were unable to do that. I mean, the space shuttle had retired in 2011, and NASA was forced to rely on Russia to fly its astronauts to the space station, And now SpaceX does it. Um, as I mentioned earlier, NASA had also awarded a contract to Boeing to do this to create some incentive to create a competition between the two companies and to have a backup in case something happened to SpaceX. But Boeing has not been able to deliver. They have not been able to fly astronauts, leading, leaving space as the sole provider. So I think NASA would really like to have Boeing on board, uh, charging ahead, uh, competing with SpaceX, because when you have competition, it's not just to drive down the price, it will increase efficiencies and safety and redundancy and all of that.

SCORING IN KAPT KFC (APM)

*<CLIP> NASA VIDEO:*

*NASA Administrator Bill Nelson: We want more competition. We want two landers. It means you have reliability. You have back ups. It benefits NASA, and it benefits the American people.*

CHRIS: So I think a lot of people are looking at it and think it will be better and a little bit more fair and equal. Once there are more companies that are able to get out there and to compete.

**[BREAK]**

**[BUMPER]**

NOEL: It’s Today, Explained, my co-pilot Chris Davenport is the space reporter for the Washington Post. Chris in the first half of the show we talked about Artemis and the mission to the moon. Let’s talk now about the International Space Station, what it is and where IT fits into these changes to NASA’s priorities.

CHRIS: The International Space Station is an orbiting laboratory, and it has been, uh, a foothold in space where, uh, people have been living continuously, uh, for more than 20 years. And if you just think about that, that's pretty amazing that there has always been a human being in space for the past 23 years or so.

*<CLIP> CANADIAN SPACE AGENCY:*

*Astronaut: We even recycle our urine!*

*Children: EWWWW*

CHRIS: astronauts go up there and they conduct science experiments. Um, the other benefit of the International Space Station, it sort of shows the soft power diplomacy of NASA and how it binds international partners together.

*<CLIP>NASA VIDEO:*

*Roscosmos cosmonaut Konstantin Borisov: ~~And also I~~ want to point out again how important it is to work together right now you see 5 nationalities here and we are looking forward to work together…*

CHRIS: So on the International Space Station, you have NASA working with the European Space Agency, working with Japan, and of course, working with its main partner, Russia. So even when there have been geopolitical tensions on the ground, particularly with Russia's invasion of Ukraine, that partnership in space has continued to to operate.

NOEL: The private sector has gotten involved with the moon missions. Is the private sector at all getting involved with the International Space Station?

CHRIS: They are! uh, NASA is looking at the the ISS and realizing that it's been up there in the harsh vacuum of space for more than two decades… And as they look ahead, particularly as they focus on the moon, NASA is saying they don't have the budget to go out and build another space station, but they don't want to lose their hold in low-Earth orbit. They want to keep astronauts going to low-Earth orbit. And so they're looking to the private sector to build, commercial habitats, uh, in space that NASA, would continue to use, but they would use it as a customer, one customer, potentially many other customers on these commercial space stations.

NOEL: Okay. So are companies going to be bidding? Uh, or approaching NASA? Are they going to be competing to build the new International Space Station? How will this work?

CHRIS: Yeah. That's right. NASA has already had a competition. They had the first round…

*<CLIP>FOX 26 HOUSTON:*

*Private companies have until February 12th to submit a design protocol to dock and eventually crash the space station on earth.*

SCORING IN LONELY SHUTTLE

CHRIS: you have um, uh, Blue Origin again, Jeff Bezos in space company is, uh, leading the effort on one side with some other partner, uh, companies and, um, a company called NanoRacks on the other side and Voyager space that, are, have are receiving, uh, tens of or hundreds of millions of dollars to build their commercial space stations.

*<CLIP> CBS NEWS:*

*Voyager CEO Dylan Taylor: We as a country can’t have a gap in terms of capability in low earth orbit, so it’s really important that we commercialize low earth orbit in anticipation of the ISS being off line as early as 2030.*

CHRIS: There's another company called Axiom Space that actually begun, uh, building their space station even before this.

*<CLIP> THE HILL:*

*Axiom CEO Michael Suffredini: We competed for a contract with NASA, we won that back in January 2020, from there we’ve been working on developing the world’s first commercial space station. We’ll assemble it, attached to the International Space Station starting in late 2024.*

CHRIS: They're based in, in Houston and hope within a couple of years to send up a module that would actually connect with the International Space Station so they can test it and see how it works. And then eventually it would detach and become a free flier and they would build, on that. So yes, you're seeing again, this extension of, uh, the commercialization of space and these public private partnerships with NASA, uh, uh, move into a new arena that traditionally had been the exclusive domain of governments.

SCORING OUT

NOEL: What would an international space station built by private companies look like? Is it going to be is it going to be nicer? <<laughs>>

CHRIS: I think so! I mean, I think, uh, yeah. I mean, uh, Axiom, for example, has hired, you know, this French architect and they want the design to be, uh, much more modern. And to the extent that it can be comfortable and plush, whereas the ISS, you know, if you've been to a federal office building here in office, you know, Washington DC, it's, you know, it's it's it's, you know, functioning but not very stylish. And a commercial station, I think would be more stylish.

There would be an emphasis on, uh, greater views of Earth. So Axiom talks about having these big windows and sort of blue Origin because I think that's part of what you do, now, the ISS does have a cupola where astronauts do spend a lot of time. Uh, but they're, they're. Primarily to do science and research. Um, not to stargaze, but I think if you have a commercial company, um, that may have some space tourists go up there, they're going to maximize, uh, comfort and, and the views of space, which, you know, if you talk to any astronaut, they say those views of Earth from space are really profound.

NOEL: But this newer plusher model of an ISS, it's still its main task would still be serving NASA's interests? There's no, there's no competition over who's in charge of it.

CHRIS: Well, the commercial company would be in charge of it. It's their space station.

NOEL: Wow! Yeah!

CHRIS: NASA would use it and and rent space on it and be, you know, one customer of many customers and want to send up its astronauts to do research. But you might have, uh, astronauts from other countries want to do this. Other countries say that are not partners on the International Space Station who want to go up. You might have, um, scientists from universities. Uh, you might want to have space tourists, as I mentioned. Um, you might want to have, um, you know, film production companies that want to, you know, film a really cool scene. I mean, there's talk that Tom cruise actually, at some point would go to the International Space Station

*<CLIP> TOP GUN:*

*MAVERICK: I feel the need, the need, FOR SPEED*

*MAVERICK AND GOOSE: OWWW*

CHRIS: and you could see, uh, more marketing, uh, TV commercials, film filmed in space, that sort of thing. I mean, I think once you open it up, uh, to the commercial sector, it's whatever people can come up with where they think they can make money.

NOEL: I'm not anti private business. I'm. I'm in a lot of ways very pro-business. But I do wonder I do wonder about Elon Musk being the one who has the comptroller frankly any any you know, any CEO of any company having control over all of this, making the decisions about all of this

while NASA, uh, you know, rents out a couple of rooms. You've been you've been covering space for a long time. You also strike me as a very levelheaded reporter. Do you think that we society lose something when space travel, when space exploration, when hanging out in ~~low-Earth or~~ low-Earth orbit goes totally private?

CHRIS: You know, NASA's it's it's there for the taxpayer. It's there for the purpose of the United States and for the country. Right? Um, these missions, um, you know, during the early days, you think of, you know, John Glenn and Neil Armstrong and all these astronauts, they were, you know, almost in a way, like soldiers going off to combat and carrying the flag. And it meant something to put an American flag on the moon. And now opening up to commercial interests, you wonder if space travel is, in a way, losing its dignity. Um, and, you know, particularly if all of a sudden you've got marketing and advertising…

*<CLIP> WALL-E:*

*Narrator: Too much garbage in your face? There’s plenty of space out in space! B&L Starliners leaving every day! We’ll clean up the mess while you’re away!*

CHRIS: we think of space and this expanse, this sort of global commons for all of humankind now being taken over by corporations. I think that is concerning. Um, other people, though, would say that that's the sort of natural evolution of things that, um, government, you know, pioneered all sorts of travel, like, you know, commercial aviation, for example. And now it's just, uh, a routine part of our lives. And, um, you know, we're able to go where we want. And that's just the price of business. And the commercial industry has shown that it can move faster, and it can be better in a lot of ways than the government, which is, you know, as perhaps it should be, uh, buried under these layers of bureaucracy where a company can be much more efficient. But you do wonder if there shouldn't be a better balance, uh, of the two, somehow. But I do think with the commercial space commercialization of space, you are losing those early days in the sort of probity and the sort of nostalgia that we had for that era. It's almost like, you know, where have you gone, John Glenn? Um, uh, because we don't have that anymore with whether it's Elon or Jeff or Richard Branson, uh, or any of them. I mean, it's just markedly different.

NOEL: It also strikes me that space, space travel, space exploration wasn't ultimately profitable enough for NASA. This is expensive stuff. And the return on it is, you know, open to interpretation.Did you ever manage to ask any of these big CEOs like, uh, how are you going to make money off of this?

CHRIS: That's the big question. Um, at what point do we sort of go into the tipping point where there is a self-sustaining space economy where it can stand on its own. And when I say that, I mean, without NASA or, really the Pentagon as well, because, you know, the Pentagon has enormous interest in space and also relies on all of these companies and gives them millions, if not billions of dollars in contracts. Um, but when do we get to the point where, um, it's no longer driven by the government and these companies aren't dependent on the government, and it is clear that we are not there yet, and it is unclear whether we will ever get there.

SCORING IN Day Trip 1 BMC

*<CLIP> ELON MUSK: We want to go far beyond the NASA requirement and actually be able to put enough payload on the moon with enough frequency, that you could actually have a permanently occupied moon base. That’s the next really big threshold from Apollo, is have an actual moon base.*

CHRIS: but whether that model will continue as we move out, you know, from low-Earth orbit to the moon…and if there's, you know, any kind of economic activity on and around the moon, that remains to be seen, and if that's going to happen, it's not going to be really, uh, anytime soon.

SCORING BUMP

NOEL: Chris Davenport, his book is The Space Barons. Victoria Chamberlin produced today’s show and Matthew Collette edited. Laura Bullard fact-checked and Patrick Boyd engineered. I’m Noel King. It’s Today, Explained.

**[10 SECONDS OF SILENCE]**